ORDINANCE NO. 182

AN ORDINANCE OF THE CITY OF GRAND TERRACE, CALIFORNIA APPROVING GENERAL PLAN AMENDMENT GPU-97-01 UPDATING THE CIRCULATION ELEMENT CONTAINED WITHIN THE INFRASTRUCTURE ELEMENT OF THE GENERAL PLAN AND RESPECTIVE NEGATIVE DECLARATION

WHEREAS, the firm of Transportation Engineering Planning has been retained by the City of Grand Terrace to update the circulation portions of the Infrastructure Element of the General Plan; and

WHEREAS, per State law the General Plan is the top hierarchical document providing guidance to the City's orderly growth and development;

WHEREAS, per State law each element of the City General Plan shall be consistent with each of the others and all other City development documents shall be consistent with it also;

WHEREAS, the updated Circulation Element is consistent with all other General Plan elements as they stand;

WHEREAS, per State law the General Plan shall be periodically updated to reflect community values, City long term goals and reasonably current data; and

WHEREAS, the Circulation Element portions of the Infrastructure Element of the City General Plan was outdated and did not include most recent issues affecting circulation. Demographic data was from the 1980 Census and circulation analysis based on local and regional development as of 1988; and

WHEREAS, the Circulation Element text as updated includes:

1) an evaluation of existing conditions;
2) identification of important circulation issues;
3) a statement of goals, objectives and implementing actions;
4) a master plan of streets and highways along with typical cross sections of different road classifications;

WHEREAS, the Circulation Element update was based on six (6) technical memoranda which are incorporated here by reference, specifically as follows:

Memorandum #1 - Issue Identification
Memorandum #2 - Existing Conditions Analysis
Memorandum #3 - Baseline Travel Demand Analysis
Memorandum #4 - I-215 Freeway Access Analysis
Memorandum #5 - Circulation Improvement Fee Program
Memorandum #6 - Technical Amendments

WHEREAS, data on technical memoranda estimates City circulation needs to the year 2015; and

WHEREAS, the Circulation Element portion of the Infrastructure Element addresses all previous General Plan Task Force and Planning Commission concerns; and

WHEREAS, the study has yielded valuable information which will help the City to plan for completion of our circulation system. These include:

- projects that should be constructed to ensure maintenance of acceptable levels of service (LOS);
- protection of residential areas from through traffic and the embellishment of a sense of place for the downtown area;
- evaluation and cost benefit analysis of major issues such as access to I-215;
- quantification of cost to complete the City's circulation system;
- development of a circulation fee program to help pay for needed capital improvements

WHEREAS, the Planning Commission, at its meeting of May 21, 1998, recommended approval of the Circulation Element via public hearing; and

WHEREAS, the City Council, at its meeting of August 13, 1998 held a properly noticed public hearing for the approval of the Circulation Element and respective Negative Declaration.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF GRAND TERRACE, CALIFORNIA DOES HEREBY ORDAIN AS FOLLOWS:

Section 1: Repeal the current Circulation Element portions contained within the Infrastructure Element of the City General Plan.

Section 2: Adopt the updated text and related memoranda of the Circulation Element in full as incorporated hereby in this Ordinance.

Section 3: Adopt related Negative Declaration.

Section 4: Direct staff to amend any other document or circulation map and/or any plan which is not in conformance with adopted Circulation Element.

Section 5: Effective Date: This Ordinance shall be in full force and effect at 12:01 a.m. on the 31st day of its adoption.

Section 6: Posting: The City Clerk shall cause this Ordinance to be posted in three (3) public places within fifteen (15) days of its adoption, as designated for such purpose by the City Council.

Section 7: First read at a regular meeting of the City Council of said City held on the August 13, 1998 and finally adopted and ordered posted at a regular meeting of said City Council on the 27th day of August, 1998.

CIRCULATION ELEMENT

MASTER PLAN OF STREETS AND HIGHWAYS

Purpose

A citywide circulation system plan can be used to influence the extent and intensity of development. The circulation system facilitates interaction between neighborhoods and activity centers. In addition, the circulation system connects the City with other communities and the region. This element describes the nature and extent of the existing circulation network, and identifies trends, issues, and public policies relating to the development of a balanced, multi-modal circulation system for the next 20 years.

Existing Conditions and Future Trends

The existing status of the roadways that make up the City of Grand Terrace Master Plan of Streets and Highways (MPSH) are discussed in "Update of the City of Grand Terrace General Plan Circulation Element Memorandum No. 2, Existing Conditions Analysis." This report reviews the status of completion of these roadways, and evaluates their Level of Service (LOS) conditions.

The principal highway through Grand Terrace is Interstate 215 (I-215), a six-lane freeway with interchanges at Washington Street (north of the City), Barton Road, and Iowa Avenue (southwest of the City). I-215 is owned and maintained by the State of California, Department of Transportation (Caltrans). Current freeway peak hour volumes result in Level of Service "F," defined as "forced or breakdown flow."

The main north-south arterial through the City is Mount Vernon Avenue, which extends from High Grove to the south, through Grand Terrace to I-215, and north into Colton. Most of existing Mount Vernon Avenue between Brentwood Street and I-215 interchange is within the City of Colton consisting of two lanes built into the side of a hill.

The main east-west arterial is Barton Road. It is the most heavily traveled surface street in Grand Terrace.

Generally, the City's existing roadways of the planned circulation system are operating at LOS C, or better. LOS C is defined as "stable flow, but marks the beginning of the range in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream." LOS C is considered the operating standard for most of the City's planned circulation system (see Objective 2, Implementing Action 1). Segments that are operating below LOS C are listed below:

ATTEST:

City Clerk of the City of
Grand Terrace and of
the City Council thereof

Mayor of the City of
Grand Terrace and of
the City Council thereof

I, BRENDA STANFILL, City Clerk of the City of Grand Terrace, California, do hereby certify that the foregoing Ordinance was introduced and adopted at a regular meeting of the City Council of the City of Grand Terrace held on the 27th day of August, 1998, by the following vote:

AYES: Councilmembers Hilkey and Singley; Mayor Pro Tem Buchanan; Mayor Matteson

NOES: None

ABSENT: Councilmember Garcia

ABSTAIN: None

City Clerk
Brenda Stanfill

Approved as to form:

City Attorney
John Harper

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1. SR 215 - LOS F
2. Barton Road over crossing of SR 215 - LOS D
3. Barton Road from Honey Hill Drive to northeast City limit - LOS F
4. Mount Vernon Avenue from Canal Street to northeast City limit - LOS F
5. Michigan Street from Barton Road to DeBerry Street - LOS D

The report, "Update of the City of Grand Terrace General Plan Circulation Element Memorandum No. 3, Baseline Travel Demand Analysis," evaluates LOS conditions of the City's planned circulation system for the year 2015. The San Bernardino Area East Valley Traffic Model (SBEVTM) was utilized to evaluate traffic conditions for the year 2015. The report states that I-215 will operate at LOS F.

The section of I-215 in the City of Grand Terrace is planned to be widened to provide High Occupancy Vehicle (HOV) lanes. This is part of a larger project sponsored by San Bernardino Associated Governments (SANBAG) and Riverside County Transportation Commission (RCTC) to improve capacity on I-215 from south of the State Route 60/I-215 Interchange in Riverside County to north of Orange Show Road in San Bernardino. Major bottlenecks on the arterial circulation system are expected to be improved as a result of the I-215 widening. These include the widening of the Barton Road over crossing of I-215, improvements to Iowa Street, and improvements to the intersection of Iowa Street at Main Street. These last two improvements are outside the City of Grand Terrace, but are essential to improving access to the City.

To complete the City's circulation system, a series of street widenings must be constructed, including a major widening on Barton Road, from Honey Hills to northeast City limit, and Mount Vernon Avenue north from Grand Terrace Road to the Gage Canal structure. It also includes full construction of Commerce Way from existing terminus to Main Street. After these improvements are completed, the City's planned circulation system roadways, excluding I-215, are forecasted to operate at LOS C, or better to build out.

Mount Vernon Avenue, north of Barton Road continues to be classified as a four-lane Secondary Highway as traffic model warrants. However, the City is concerned that this roadway improvement may not be cost-effective and that alternative solutions should be considered. The appropriate classification of Mount Vernon Avenue may require further study. The segment of Mount Vernon Avenue, north of Grand Terrace Road to Gage Canal structure, is shared with the City of Colton, where it is designated as a two-lane roadway.

In 1992, the North-South Corridor Study was completed with the purpose of developing a circulation plan which would improve access between the Moreno Valley area and cities in the San Bernardino East Valley area. One of the study's recommendations is to improve Pigeon Pass Road to a four lane arterial. If this improvement is constructed it will cause a significant increase of regional traffic on Grand Terrace streets. Mitigation to the congestion caused by this additional traffic would need to be provided on at least one of the following routes:

- Main Street to Iowa to I-215 (This would require ultimate improvements to the Main Street/Iowa intersection; Iowa widening to four lanes and perhaps two grade crossings over Santa Fe and Pacific Rail Roads.)
- Mt. Vernon to Barton Road to I-215 (This would require widening of Barton Road overpass.)
- Mt. Vernon to Colton to I-215 (This would require widening of Mt. Vernon to four lanes from Grand Terrace Road north to I-215 and improvements of Mt. Vernon-I-215 ramp connections.

The use of Mt. Vernon as a regional arterial with high traffic volumes is incompatible with the residential land use that directly fronts the roadway. Cost effective mitigation measures for the potential North-South Corridor improvements will need to be further evaluated in view of road conditions existing at the time project is adopted. Further evaluation at this time is premature.

Four arterials of the City's planned circulation system are considered regionally significant, and are included in SANBAG's Congestion Management Program (CMP) System. These are Barton Road, Mount Vernon Avenue, Michigan Street, and Main Street. Please refer to Figure A for the City's Master Plan of Streets and Highways, and Figure B for Road classifications Typical Cross Sections.

Identification of Issues

The City Council, Planning Commission, and the City's General Plan Task Force have identified the following issues concerning the City's Master Plan of Streets and Highways:

1) Circulation impacts of development and regional transportation improvements on Grand Terrace from the adjacent vicinity for a future horizon of approximately twenty years. Specific issues of concern include the impacts of I-215, the prospective widening and upgrading of Pigeon Pass Road, development impacts of the City's Industrial area, and future development in adjacent communities.

Response: These issues were addressed in "Update of the City of Grand Terrace General Plan Circulation Element Memorandum No. 3, Base Line Travel Demand Analysis." The circulation system shown on Figure A is the product of this analysis which identifies circulation system improvements to maintain the City's LOS standard and will accommodate the impacts of future development. The impacts of Pigeon Pass Road improvements are also addressed in I-215 Freeway Access Analysis Memoranda No. 4, and under Objective 1, Implementing Action 4.

2) The need for arterial enhancements connecting to I-215 in response to future prospective capacity deficiencies.

Response: This issue was addressed in "Update of the City of Grand Terrace General Plan Circulation Element Memorandum No. 4, I-215 Freeway Access Analysis." Access alternatives were reviewed which have been identified in previous studies. It was found that the most cost-effective way to improve freeway access for Grand Terrace is via the La Cadena/Iowa interchange instead of a new connection to the I-215 Freeway; as this new connection would not significantly mitigate negative impacts of regional traffic. To improve access via this interchange, the City should work with SANBAG, Caltrans, and Colton to ensure that Iowa is widened to four lanes, north of Main Street. In addition, the intersection of Iowa at Main Street should be improved to provide adequate capacity for future traffic demand, including the high-volume of large truck traffic anticipated at this intersection. See Objective 1, Implementing Aciton 5.

3) Additional arterial capacity to serve the City's industrial area.

Response: This issue was also addressed in the I-215 Freeway Access Analysis Memorandum No. 4, which recommended to provide Commerce Way as the primary street to provide access to the City's industrial area, in order to allow Michigan to continue as a residential collector south of DeBerry.

4) Multi-modal facilities including interconnection with regional transit facilities, such as Metrolink; local shuttles; and bikeways and pedestrian facilities.

Response: This issue is addressed under Objective 3, Implementing Actions 2, 5, 6 and 7.

5) Shared circulation system improvements with the City of Colton including La Cadena Drive, Main Street, Mount Vernon Avenue, Westwood Street and the intersection of Main Street at Iowa.

Response: This issue is addressed under Objective 1, Implementing Actions 5, 6.

6) Consideration of a traffic impact fee to be charged to new development to fund construction of improvements to keep the Master Plan circulation system operating at LOS C, or better.

Response: This issue is addressed under Objective 5, Implementing Actions 5 and 7.

7) Traffic safety, especially in the vicinity of schools.

Response: This issue is addressed under Objective 2, Implementing Actions 2, 4, and Objective 3, Implementing Action 8.).

8) Infiltration in residential neighborhoods of general and truck traffic.

Response: This issue is addressed under Objective 4, Implementing Actions 1,2.

9) Amenities to Barton Road to enhance its attractiveness as the City's primary commercial corridor, and to encourage bicycle and pedestrian modes of travel, and to resolve egress/ingress traffic conflicts.

Response: Initially, the General Plan Task Force asked that alternatives be studied which would reduce capacity and slow traffic on Barton Road. These included reduction of Barton Road to a two lane roadway, and the provision of diagonal, on-street parking. These alternatives were found to be unacceptable. Barton Road is recommended as a four lane, Major Highway (see Figure A), with a raised median and amenities to promote pedestrian and bicyclist modes of travel. The median would also resolve egress/ingress traffic conflicts. See Objective 2, Implementing Action 6 and Objective 3, Implementing Action 7.

Statement of Goals and Objectives

Goals:

1. To provide for a transportation system which supports planned land uses and improves the quality of life.

2. To promote the safe and effective movement of all segments of the population and the efficient transport of goods.

3. To make efficient use of existing and future transportation facilities.

4. To protect environmental quality and promote the wise and equitable use of economic and natural resources.

Objective 1:

Plan, provide, and maintain an integrated the vehicular circulation system to accommodate projected local and regional needs.

Implementing Actions:

1. Streets are divided into six categories based on a design standard for forecasted traffic volumes from the SBEVTM. These categories are: 1) Freeway; 2) Major Divided Highway; 4) Major Highway; 5) Secondary Highway; and 6) Collector. Figure A shows the designated roadways of the City's Master Plan of Streets and Highways (MPSH). Figure B shows the typical cross sections for each of these categories plus the local classification. All City streets not shown on Figure A, are classified as Local Streets.

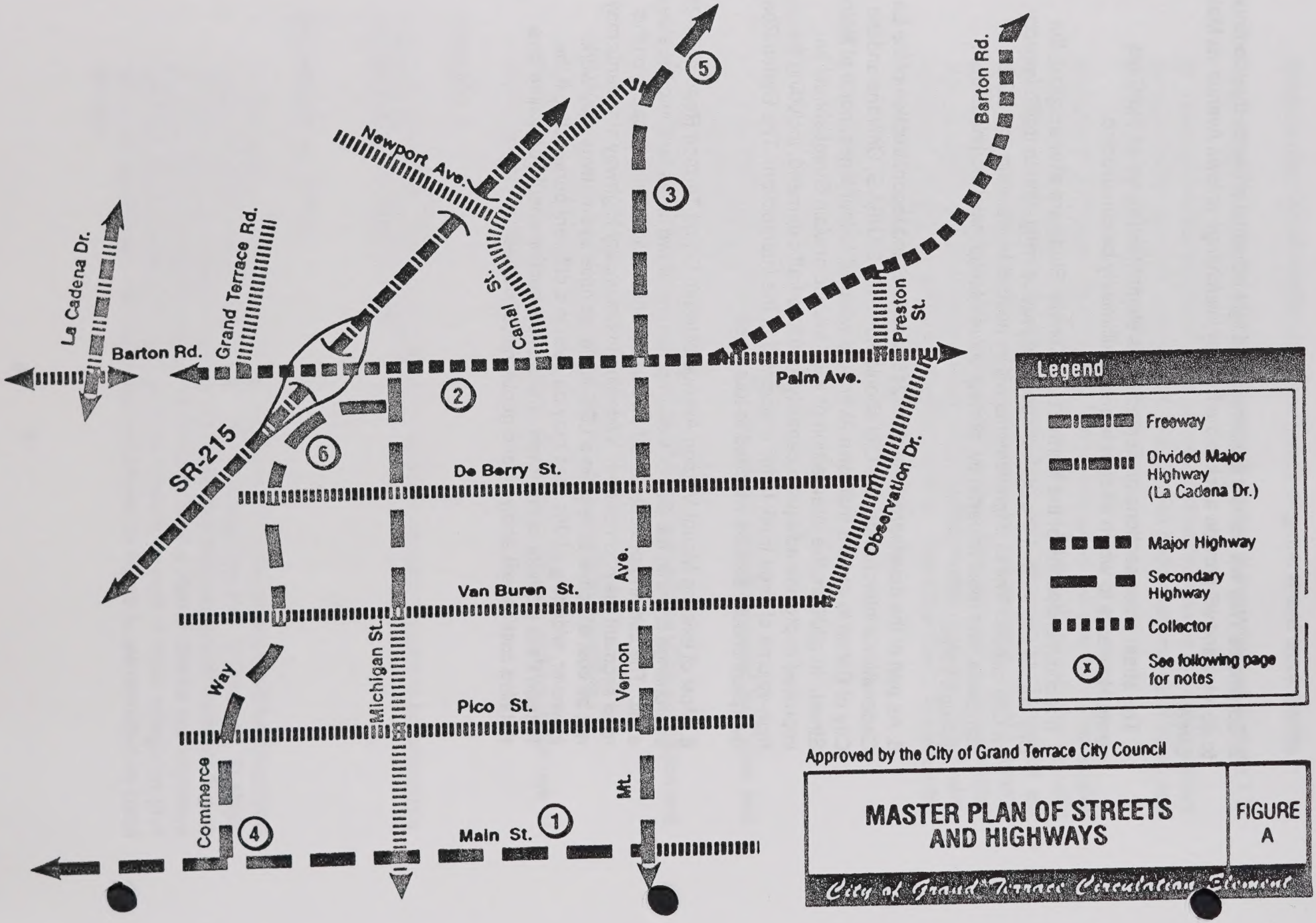
2. Commerce Way will serve the business and light industrial areas as they continue to develop and will provide a link to the freeway interchange at Iowa Avenue via Main Street.

3. The street cross-sections presented in this element will serve as the City's street standards to which all streets should ultimately be constructed.

4. If recommendations of the North-South Corridor Study are ever adopted, the City should ensure that the project sponsors provide mitigation to traffic impacts on City streets. These improvements will be needed to maintain City LOS standards, and most impartantly, protect our residential neighborhoods from through traffic.

5. As part of the development of the I-215 widening, and reconstruction of the La Cadena\Iowa interchange, the City should work with SANBAG, Caltrans and the City of Colton to ensure that Iowa Avenue is widened to four lanes, north of Main Street. In addition, the intersection of Iowa Avenue at Main Street should be improved to provide adequate capacity for future traffic demand, including the high-volume of large truck traffic anticipated at this intersection. The Barton Road overpass should also be widened to four lanes.

6. Most of existing Mount Vernon Avenue between Grand Terrace Road and I-215 interchange is within the City of Colton consisting of two lanes built into the side of a hill. The use and projected traffic volumes indicate additional capacity on this road segment may be needed. Widening to Secondary Highway standards may not be cost effective to resolve a LOS issue, as other alternatives may work. However, widening of this road may be seen in a different perspective if the Pigeon Pass Corridor is improved. Future construction should be based on a detailed cost/benefit analysis and geotechnical studies.



Approved by the City of Grand Terrace City Council

MASTER PLAN OF STREETS AND HIGHWAYS

FIGURE A

City of Grand Terrace Circulation Element

City of Grand Terrace
Master Plan of Streets and Highways
Figure A Notes

1. North side, only. South side is in Riverside County

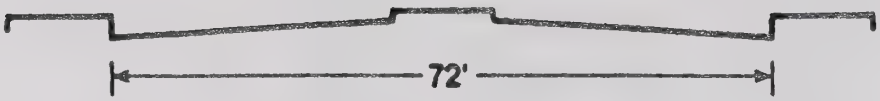
2. Raised median from Vivienda Avenue to Mt. Vernon Avenue

3. Raised median from Grand Terrace Road to approximately 300 ft. south

4. Future intersection approximately one eighth mile east of Taylor Street

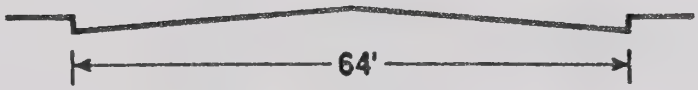
5. East side, only from Grand Terrace Road to the Gage Canal structure. West side is in Colton.

6. Segment from Michigan Street to approximately 600 feet west, has a curb to curb width of 60 feet in 88 feet right of way, with exception of one parcel with 80 feet right of way. Extension of Commerce Way to be build to Secondary Standard shown on Figure B.

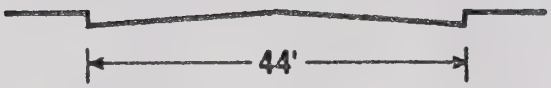


Major Highway - 100'
(4 Lanes Divided)

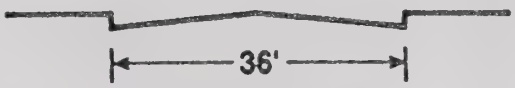
Divided Major Highway (La Cadena Dr.) - 120'



Secondary Highway - 88'
(2 Lanes Undivided)



Collector - 66'
(2 Lanes Undivided)



Collector - 60'
(2 Lanes Undivided)

TYPICAL CROSS SECTION	FIG B

7. New development projects will be analyzed in accordance with SANBAG Congestion Management Program (CMP) Traffic Impact Analysis (TIA) Guidelines. The City shall consider local adoption of traffic study guidelines for projects which do not meet the CMP TIA trip generation thresholds.

8. The City will work to ensure that projects outside the City which cause additional traffic on the City's circulation system will be responsible for any mitigation that may be necessary.

Objective 2

Develop a vehicular circulation system consistent with accepted standards of transportation engineering safety, with sensitivity to adjoining land uses.

Implementing Actions:

1.The maximum acceptable LOS for MPSH roads maintained by the City shall be LOS C. However, intersections at freeway ramps may have LOS D in peak travel hours.

2. The City will utilize the Caltrans Design and Traffic Manuals as guidelines for street lighting, traffic signage, street markings and intersection signalization.

3. The City will continue to require that new developments provide adequate off street parking in order to minimize the need for on-street parking.

4. The City will ensure that local street improvements are designed with proper attention to community appearance and aesthetics as well as the need to move traffic safely and efficiently.

5. Construct a raised median on Mount Vernon Avenue from Grand Terrace Road to approximately 300 feet south to provide an area for placement of a City entrance sign.

6. Construct a raised median on Barton Road to increase vehicular and pedestrian safety between Vivienda Avenue and Mount Vernon Avenue.

Objective 3

Establish, develop, and promote systems and amenities for alternative travel modes including bicycles, pedestrians and transit.

Implementing Actions:

1. Promote measures which reduce reliance on single occupant vehicle usage by enforcement of the Traffic Control Measures (TCM) ordinance which addresses the following: development design standards, land-use patterns, employer based ride share programs, and bicycle/pedestrian facilities.

2. Public transit will be encouraged by City participation in local and regional transit programs.

1. Study High Grove as a possible commuter rail station which would also serve as a hub for bus transit, local trolley, and bicycle lane system serving Grand Terrace activity centers including the Barton Corridor, parks, and schools.

2. Work with SANBAG to ensure that Grand Terrace's needs for access to regional transit and commuter rail are addressed in the San Bernardino County Comprehensive Transportation Plan.

3. The City will promote and facilitate the use of the bicycle as an alternative mode of transportation through the development of a City-wide network of bikeways.

4. The City will encourage and facilitate pedestrian movement by creating environments that are conducive to walking and maintaining a "human scale" of development.

5. The City will work closely with the regional transit agencies to ensure the convenient and affordable bus service continues to be available to local residents.

6. Work with OmniTrans and SANBAG to implement a public transit system that meets the City's need for internal circulation and connections to regional activity centers and inter-urban transit routes.

7. Provide amenities on Barton Road to promote pedestrian and bicyclist use, such as a continued system of pedestrian paths and bikelanes to connect the City Center with schools, parks and residential areas.

8. A Pedestrian Sidewalk Master Plan is recommended to be developed, which includes the following elements:

A "Suggested Routes to Schools Plan", as recommended by the Caltrans Traffic Manual. The plan will be developed in cooperation with the school district. The plan will identify preferred pedestrian routes to each school site in Grand Terrace.

A survey of the gaps in the City's sidewalk network to identify locations where sidewalks are needed but do not exist or are deficient. The next step is to prioritize a list of locations where future sidewalk projects should be constructed. The prioritization will be based on need.

Objective 4

Take proactive measures to ensure that the City's residential neighborhoods are not adversely affected by excessive traffic and are more liveable and pedestrian friendly.

Implementing Actions:

1.The City will continue to route truck traffic away from residential areas and work with regional agencies in order to mitigate potential impacts from regional traffic.

2. Investigate the feasibility of implementing traffic calming measures on residential local and collector streets, including, but not limited to, chicanes, street narrowings, traffic circles, and speed humps.

Objective 5

The City will ensure that the Master Plan of Streets and Highways Circulation System shown as Figure A is completed by utilization of a variety of means to fund the construction of these improvements which are described below. In addition, the City will pursue alternative means to fund ongoing maintenance and safety enhancement of the circulation infrastructure.

Implementing Actions:

1. The City will continue to obtain dedications from new developments for street improvements as required to complete the MPSH map, which is shown Figure A, pursuant to provisions of the California Sub-division Map Act and other legal requirements.

2. The City will require that street improvements be constructed at the time that development occurs on vacant or underutilized property.

3. The extension, improvement and maintenance of streets within the City limits will be based upon an adopted capital improvement program.

4. The prioritization of street improvements within the City's capital improvement program will be based on: 1) the size of the area of benefit; 2) the severity of the problem that the street improvement is intended to eliminate; and 3) the City's ability to procure funding therefor.

5. Commitment of public funds to provide necessary off-site improvements for development of vacant private property will consider the net revenue which the development will produce for the City over time.

6. The fiscal programming of on-going street maintenance and improvements will consider the use of special assessments to those properties which most directly benefit.

7. The City will aggressively pursue all potential sources of funding for street improvements and maintenance and will optimize the use of such funds. In carrying out this policy the City, or its redevelopment agency, will:

1. Continue to use state gas tax funds and other state subventions for eligible street improvement and maintenance purposes.

2. Continue to work with SCAG, SANBAG, and Caltrans to promote funding allocations to regional transportation projects that benefit the City of Grand Terrace.

3. Pursue the use of federal and state funds for improvements on eligible streets, including Air Quality funds.

4. Allocate tax increments being generated by the Grand Terrace Redevelopment Agency for street improvements as priorities permit.

5. Consider Redevelopment Agency low interest loans and industrial development bonds for infrastructure improvement.

6. Consider establishment of benefit assessment districts when funding is otherwise unavailable, whereby those properties directly benefitting would be assessed for street improvement or maintenance costs. This may include a traffic impact fee which could be charged to new developments throughout the City or be targeted for individual areas of a smaller scale.

8. The City will pursue the execution of a cooperative agreement with Caltrans for the proposed improvements to the Barton Road/1-215 Freeway Interchange, including ramp modifications and bridge widening.

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UPDATE OF THE CITY OF GRAND TERRACE GENERAL PLAN CIRCULATION ELEMENT

Memorandum # 1

ISSUE IDENTIFICATION

September 1996 (Revised August 1998)

The City of Grand Terrace has initiated an update to its Circulation Element of its General Plan in response to an in-depth review that was commenced by the City Council and General Plan Task Force in 1995.

As the first task of this update, TEP, the City's General Plan consultant, has been directed to review the minutes of City Council and the General Plan Task Force and identify the major issues that should be addressed. These are identified as follows:

1) Circulation impacts of development and transportation improvements on Grand Terrace and the adjacent vicinity for a future horizon of twenty years. Specific issues of concern include the impacts of I-215, the prospective widening and upgrading of Pigeon Pass Road, development impacts of the City's Industrial area, and future development in adjacent communities.

2)The need for arterial enhancements connecting to I-215 in response to future capacity deficiencies. Some alternatives that should be considered include an off ramp at Commerce Way, or DeBerry, or modified freeway access at Iowa.

3) Additional arterial capacity to serve the City's industrial area via Michigan and/or Commerce Way, especially to accommodate future traffic to be generated by new development in the City's industrial area. Other arterials that should be studies include Michigan, Palm, Barton Road, and its over crossing of the I-215.

4) Multi modal facilities such as interconnection with regional transit facilities, local shuttles, bikeways. The circulation element update will emphasize bikeway, pedestrian, shuttle, and traditional fixed route bus facilities that enhance accessibility to regional transit such as Metrolink.

5) Shared circulation issues with the city of Colton including La Cadena Drive. Currently, the Colton circulation element designates La Cadena Drive as a Major Arterial with a right of way of 100 feet and an outside curb to curb width of 72 feet. The Grand Terrace circulation element shows La Cadena Drive as a Modified Major Highway with a right of way of 120 feet and an outside curb to curb width of 94 feet.

6) A traffic impact fee to be charge to new development to fund construction of improvements to keep the circulation system at operating at Service Levels C or better. Note: For the fee to be legally enforceable, it must only cover the circulation

infrastructure costs of new development, and nothing more. The fee cannot be used pay for circulation improvements required to mitigate the impacts of projects outside the City.

7) Traffic safety, especially in the vicinity of schools.

8) Infiltration in residential neighborhoods of general and truck traffic.

9) Amenities to Barton Road to enhance its attractiveness as the City's primary commercial corridor, and to encourage bicycle and pedestrian modes of travel.

To address the issues identified above, a work program has been developed, which will be completed over the next several weeks. The major components of this work program are discussed below:

Travel Demand Analysis

TEP will work with staff of City of San Bernardino which has developed the East Valley Traffic Forecast Model. This computerized tool is to be used to evaluate Year 2015 Average Daily Traffic and Level of Service (LOS) conditions of the City's existing Circulation Element. Any segments found to fall below the City LOS C standard will be identified, and a list will be compiled of lane additions to remedy these deficiencies.

In addition, travel demand conditions will be evaluated for the following topics:

I-215 Freeway Access

Access to the City industrial zone via Michigan St. and Commerce Way.

La Cadena Drive and Mount Vernon Avenue.

I-215 Freeway Access

As indicated above, the traffic model will be used to identify the travel demand needs for future freeway access. This will be useful information to evaluate findings from previous analysis that have been prepared by San Bernardino Associated Governments (SANBAG), and recommendations from the City General Plan Update Task Force. In addition, several years ago an engineering study was prepared for the City evaluating I-215 freeway access. This study will also be reviewed.

Access alternatives will be identified. The impact of these alternatives will be evaluated on adjacent land uses and for consistency with Caltrans design criteria.

Impact Fee

A technical analysis will be completed which the City will be able to use to set up a fee

program to fund circulation improvements, in accordance with the legal provisions of AB 1600. This law requires that there be a "nexus basis" for any fee charged to new development. The total cost of improvements will include the cost of travel way and right of way for additional travel lanes to complete the Circulation Element, signalization on intersections of arterials, and freeway access as identified in the recommended alternative.

A fair share cost of these improvements will be estimated that can be assigned to new development in Grand Terrace. A fee will be recommended based on trip generation characteristics of new development.

Typically, retail commercial development has the highest trip generation characteristics of any category of land use. This can result in a fee program that is excessively weighted against this category which would be detrimental to the City's interest to increase retail sales tax revenue. TEP has experience dealing with this fee program issue, and will recommend a legally defensible fee program that does not weigh excessively against retail commercial development.

Updated Circulation Element

Once the technical work outlined above is completed, the existing Circulation Element will be rewritten as warranted. Specific, Additional topics to be addressed include:

Multi modal facilities such as interconnection with regional transit facilities, local shuttles, bikeways.

Shared circulation issues with the city of Colton including La Cadena Drive, and Mount Vernon Avenue.

Following completion of the draft updated Circulation Element, it will be submitted for review by General Plan Update Task to review and comment on the draft. Following receipt of input on the draft, the Updated Circulation Element will be finalized, and submitted for approval by City Council.

Transportation Engineering and Planning

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UPDATE OF THE CITY OF GRAND TERRACE GENERAL PLAN CIRCULATION ELEMENT MEMORANDUM NO. 2

NOVEMBER 1996 (Revision SEPTEMBER 1997)

EXISTING CONDITIONS ANALYSIS

PURPOSE

This is one of five technical memoranda that constitute the traffic analysis for update of the City of Grand Terrace Circulation Element. The purpose of this memorandum is to document the analysis of existing conditions of the City's Circulation Element with respect to the following:

1. Review the current status of completion of the Master Plan of Streets and Highways (MPSH) of the City Circulation Element.

2. Evaluate level of service (LOS) conditions of the completed portions of the MPSH.

CURRENT STATUS OF THE MPSH

The MPSH is shown as Figure VII-4 of the City's Circulation Element and is represented in this memorandum as Figure A. The MPSH is the City's official plan for future roadway improvements. Since the plan adoption the City has considered many modifications to it. For some locations, the plan may not reflect current thinking of the City Council or staff. It is the intent of this update of the Circulation Element to reconcile the MPSH with current needs of the City.

Most of the MPSH has been completed. However, the following are segments of the MPSH remain to be completed:

1. Barton Road from S.P.R.R. to the northbound on- and off-ramps for SR 215, add two lanes to complete as a Major Highway.

2. Barton Road from the northbound on- and off-ramps of SR 215 to Palm Avenue, add two lanes to complete as a Modified Major Highway.

3. Barton Road from Honey Hill Drive to northeast City limit, add two lanes to complete as a Major Highway.

4. Commerce Way from Michigan Street to Main Street, add four lanes to complete as a Secondary Highway.

5. Michigan Street from Barton Road to Commerce Way, add four lanes to complete as a Modified Major Highway.

6. Michigan Street from Commerce Way to DeBerry Street, add two lanes to complete as a Secondary Highway.

7. Mount Vernon Avenue from Canal Street to northeast City limits, add two lanes to complete as a Secondary Highway.

8. Mount Vernon Avenue from DeBerry Street to Main Street, add two lanes to complete as a Secondary Highway.

LOS ANALYSIS

Figure B shows the traffic flow data which was used to evaluate existing traffic conditions of completed segments of the MPSH. Several data sources were used and described as follows:

1. 1996 City Intersection Analysis - In 1996 the City evaluated LOS conditions at two intersections for the a.m. and p.m. peak hour. The City was required to analyze these two intersections as input to the San Bernardino County Congestion Management Program (CMP).

2. 1995 San Bernardino County CMP - On an annual basis, SANBAG prepared a comprehensive LOS analysis of roadways included in the San Bernardino County CMP system. In 1995 this included two intersections in Grand Terrace and segments of the SR 215.

3. San Bernardino County Station Count - On a quarterly basis, the County of San Bernardino Transportation Department collects twenty-four hour, average daily traffic (ADT) counts at several stations located throughout the County. One of these stations is located in Grand Terrace on Barton Road at Mount Vernon Avenue.

4. City Traffic Counts - In 1996, the City had taken approach and egress ADT counts of all legs of four major intersections. These data were collected for input to the Circulation Element Update Study.

5. The San Bernardino East Valley Traffic Model (SBEVTM) ADT Assignments - The City of San Bernardino in cooperation with other East Valley cities including Grand Terrace has developed a model to forecast traffic conditions. As one step in its development, the model was used to generate ADT assignments to determine how well it replicates recent conditions. The 1994 SBEVTM ADT assignments for the Grand Terrace area are shown on Figure B. The SBEVTM is the most comprehensive source of information concerning recent traffic conditions because it includes assignments for nearly all segments of the City's MPSH.

A statistical analysis was performed to determine if the SBEVTM data can be considered to accurately reflect existing conditions. This analysis is summarized on Table A and graphically represented on Figure C. The analysis is based on a comparison of traffic counts with assignments from the SBEVTM for 17 segments within the City's circulation system. The most important measure of correlation of the traffic model assignments with traffic counts is the correlation coefficient. Table A shows that there is a correlation coefficient of .90. This means that there is a very high degree of correlation and therefore the model should be considered at a valid tool for evaluation existing and future conditions in Grand Terrace.

LOS Definition

LOS is a criteria used to describe the quality of traffic flow. LOS is graded from A through F. LOS A indicates free flowing uncongested traffic flow while LOS F indicates gridlock. Table B describes the range of LOS conditions A through F.

LOS is most frequently measured for the peak hours of traffic flow. In most developed areas there is usually a peak hour in the morning and a second peak hour in the afternoon. Sometimes in commercial areas there is a third peak hour of traffic flow at midday.

Estimated LOS

The ADT data shown on Figure B cannot be used to directly measure LOS, however the ADT data can be used to infer LOS conditions. Table C is used to infer LOS conditions based on ADTs. This table shows threshold volumes for LOS conditions A through F.

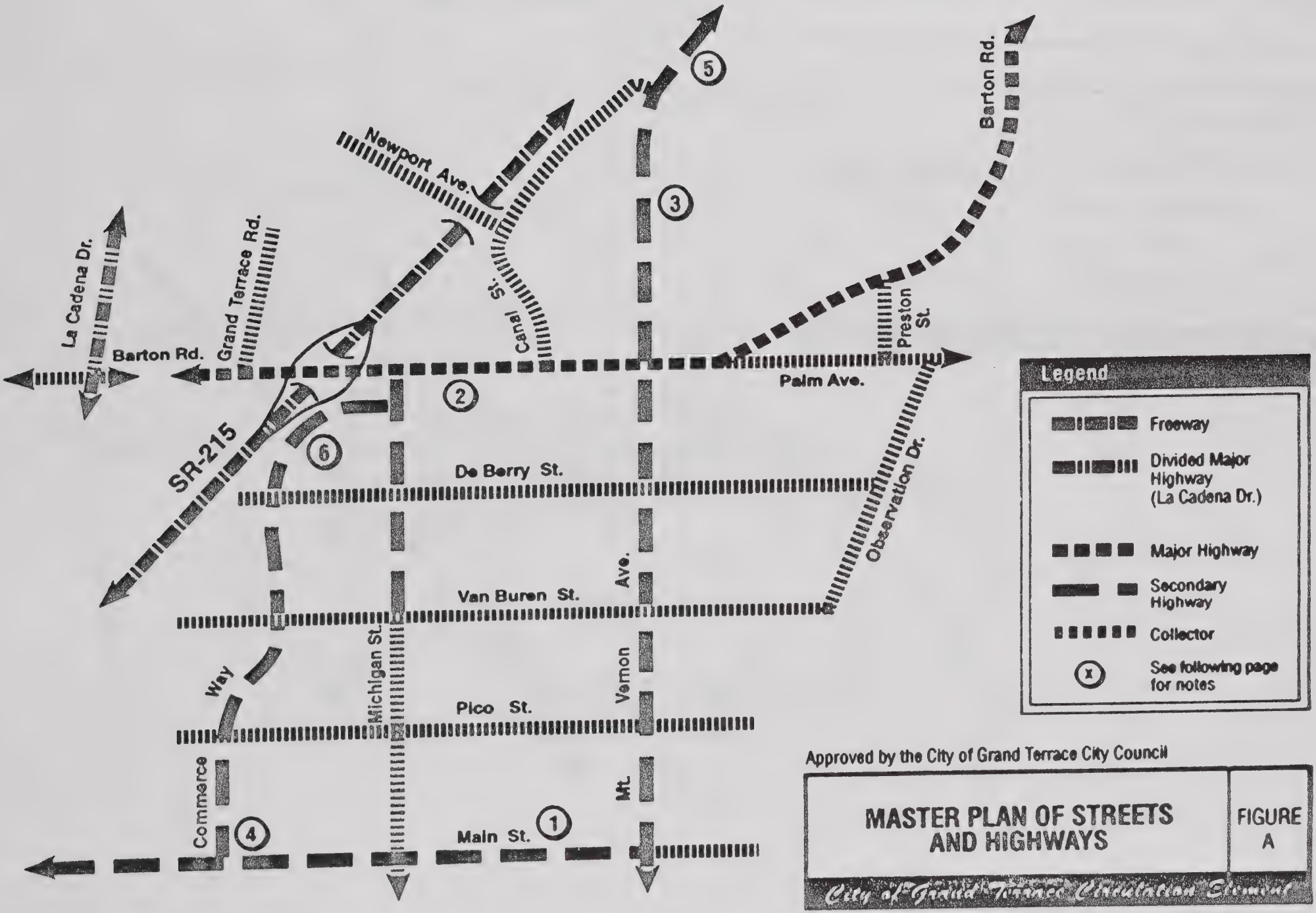
Analysis and Findings

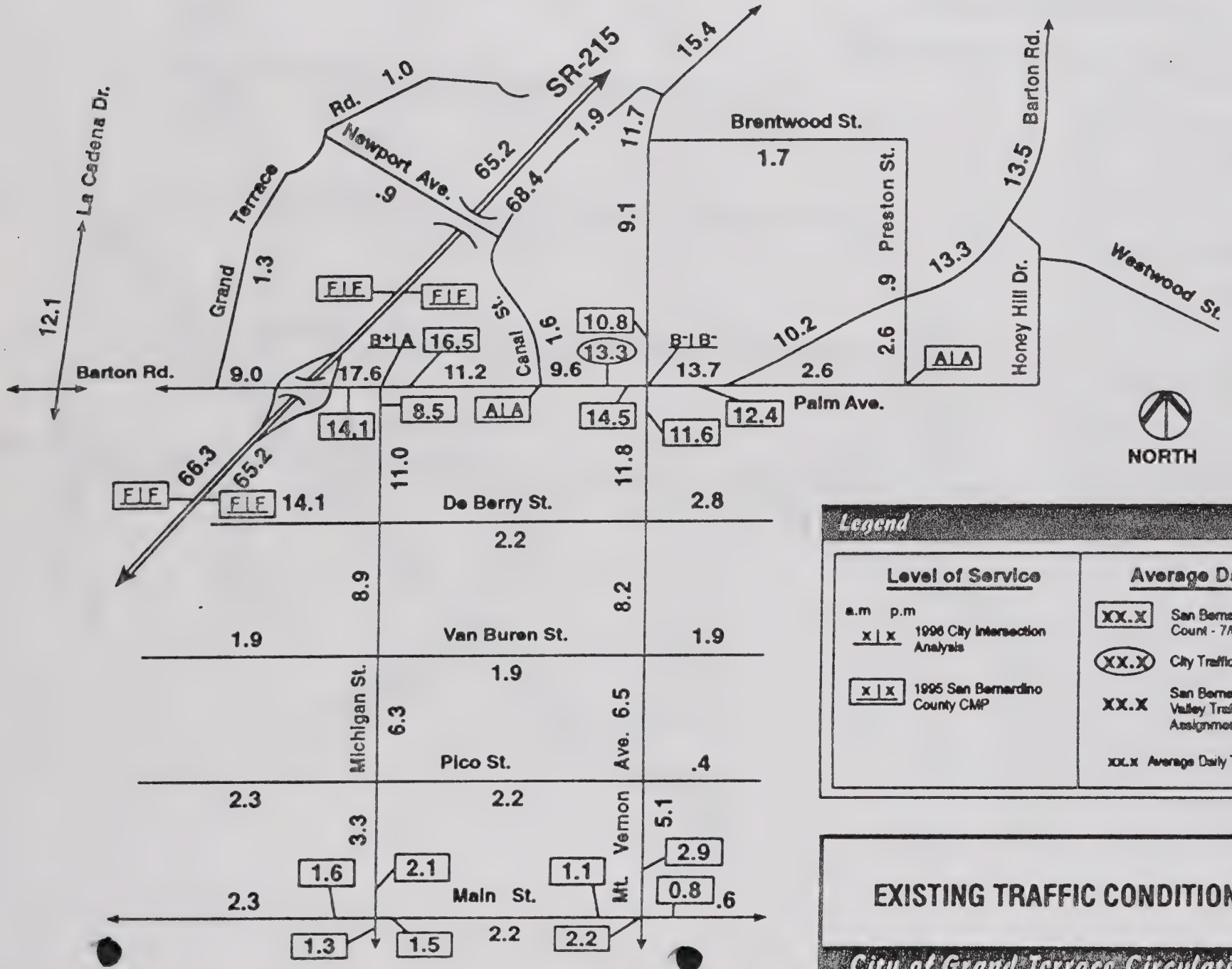
The City's current Circulation Element mandates the following implementation policy, "The minimum acceptable level of service (LOS) for the local street system shall be LOS "C". (Page VII-15) The traffic flow data shown on Figure B was analyzed in light of this established city policy. It was found there are five segments of the existing components of the MPSH that do not meet the minimum acceptable LOS as defined by this policy. There are the following:

1. SR 215 - LOS F
2. Barton Road overcrossing of SR 215 - LOS D
3. Barton Road from Honey Hill Drive to northeast city limit - LOS F
4. Mount Vernon Avenue from Canal Street to northeast city limit - LOS F
5. Michigan Street from Barton Road to DeBerry Street - LOS D

Conclusion

Generally the city's existing components of the MPSH are operating at an acceptable LOS with the exception of the segments listed above.


Barton Rd.
Grand Terrace Rd.
La Cadena Dr.
Newport Ave.
Canal St.
Preston St.
Palm Ave.
Barton Rd.
SR-215
De Berry St.
Observation Dr.
Van Buren St.
Ave.
Michigan St.
Vernon
Way
Pico St.
Commerce
Mt.
Main St.
1
2
3
4
5
6
Legend
Freeway
Divided Major Highway (La Cadena Dr.)
Major Highway
Secondary Highway
Collector
See following page for notes
Approved by the City of Grand Terrace City Council
MASTER PLAN OF STREETS AND HIGHWAYS
FIGURE A
City of Grand Terrace Circulation Element



Legend

Level of Service

a.m p.m

x | x — 1996 City Intersection Analysis

x | x — 1995 San Bernardino County CMP

Average Daily Traffic

XX.X — San Bernardino County Station Count - 7/95

XX.X — City Traffic County - 7/96

XX.X — San Bernardino East Valley Traffic Model Two-Way Assignment-1994

xx.x Average Daily Traffic in Thousands

EXISTING TRAFFIC CONDITIONS

FIGURE 8

City of Grand Terrace Circulatio pdate

Grand Terrace Circulation Element Update

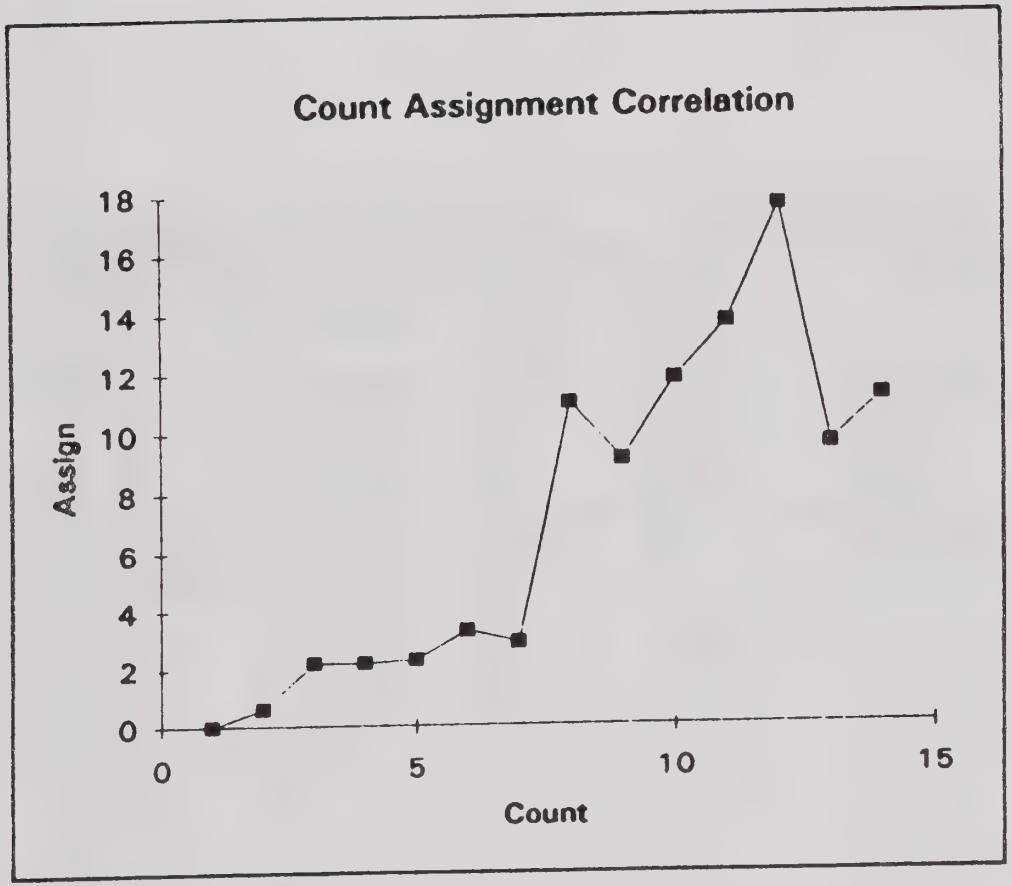


Figure C

Table A

Grand Terrace Circulation Element Update

Correlation of Traffic Counts to East Valley Traffic Model Assignments

Location	Count	Assignment	Difference
Barton w/o Michigan	14.1	17.6	3.5
Barton e/o Michigan	16.5	11.2	-5.3
Michigan s/o Barton	8.5	11	2.5
Barton w/o Van Buren	14.5	9.6	-4.9
Barton e/o Van Buren	12.4	13.7	1.3
Van Buren n/o Barton	10.8	9.1	-1.7
Van Buren s/o Barton	11.6	11.8	0.2
Main w/o Michigan	1.6	2.3	0.7
Main e/o Michigan	1.5	2.2	0.7
Michigan n/o Main	2.1	3.3	1.2
Main w/o Mount Vernon	1.1	2.2	1.1
Main e/o Mount Vernon	0.8	0.6	-0.2
Mount Vernon n/o Main	5.1	2.9	-2.2
Total	100.6	97.5	-3.1
Mean	7.74	7.50	-0.24
Standard Deviation	5.90	5.49	2.63
Av. Difference / Av. Count	-0.03		
Standard Deviation / Av. Assignment	0.73		
Correlation Coefficient	0.90		
Regression Line Slope	0.83		

TABLE B
LEVEL OF SERVICE DESCRIPTIONS
GRAND TERRACE CIRCULATION ELEMENT UPDATE
EXISTING CONDITIONS ANALYSIS

LOS	Traffic Flow Conditions	V/C Range
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.	0.00 - 0.60
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.	0.61 - 0.70
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.	0.71 - 0.80
D	High-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.	0.81 - to 0.90
E	Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.	0.91 - 1.00
F	Level-of-Service F. Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Arrival flow exceeds discharge flow.	>1.00

Level of Service definitions derived from the 1985 Highway Capacity Manual, Transportation Research Board.

Table C
GRAND TERRACE CIRCULATION ELEMENT UPDATE
EXISTING CONDITIONS ANALYSIS
DAILY SERVICE VOLUME STANDARDS BY LEVEL OF SERVICE

Type of Arterial	Arterial Level of Service*				
	A	B	C	D	E
8 Lanes Divided	45,000	52,500	60,000	67,500	75,000
6 Lanes Divided	33,900	39,400	45,000	50,600	56,300
4 Lanes Divided	22,500	26,300	30,000	33,800	37,500
4 Lanes (Undivided)	15,000	17,500	20,000	22,500	25,000
2 Lanes (Undivided)	7,500	8,800	10,000	11,300	12,500

*Maximum Average Daily Traffic (ADT)

These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS "E" service volumes are estimated maximum daily capacity for respective arterial classifications. Arterial capacity is affected by such factors as intersections (spacing, configuration, and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic), and pedestrian and bicycle traffic.

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UPDATE OF THE CITY OF GRAND TERRACE GENERAL PLAN CIRCULATION ELEMENT MEMORANDUM NO. 3 BASELINE TRAVEL DEMAND ANALYSIS

February 1997 (Revision: September 1997)

PURPOSE

This is the third of five technical memoranda that constitute the traffic analysis of the Update for the City of Grand Terrace Circulation Element. The purpose of this memorandum is to evaluate Year 2015 average daily traffic (ADT) and level of service (LOS) conditions of the City's existing Circulation Element Network.

Using the San Bernardino Area East Valley Traffic Model (SBEVTM) this memorandum identifies additional improvements that are warranted to achieve the City's LOS C standard. In addition, travel demand conditions will be evaluated for the special topics: roads that are shared with the City of Colton and I-215/Industrial Zone Access.

METHODOLOGY

The San Bernardino East Valley Traffic Model

The City of San Bernardino, in cooperation with other East Valley cities including Grand Terrace, has developed a model to forecast traffic conditions for the Year 2015. For the City of Grand Terrace, 2015 reflects build out of the General Plan. The SBEVTM is the most comprehensive source of information concerning future year traffic conditions in the Grand Terrace area.

The 2015 highway network that was developed for the SBEVTM was based on expected build out conditions in the City of Grand Terrace. In some cases, the build out conditions do not reflect the City's existing circulation element. Table A summarizes inconsistencies between the SBEVTM travel network and the City's existing Circulation Element.

LOS Analysis

LOS is a criteria used to describe the quality of traffic flow. LOS is graded from A to F. LOS A indicates free flowing uncongested traffic flow, while LOS F indicates gridlock. Table B describes the range of LOS conditions A through F.

The ADT data from the SBEVTM cannot be used to directly measure LOS. However, the ADT data can be used to infer LOS conditions. Table C is used to infer LOS conditions based on ADTs. This table shows threshold volumes for LOS conditions A through F.

SYSTEM DEFICIENCIES

Figure A presents a baseline travel demand analysis for year 2015 conditions using the SBEVTM. Figure A shows the number of lanes, ADT, volume to capacity ratio, and inferred LOS for the Year 2015. The City's existing Circulation Element states "the minimal acceptable level of service (LOS) for the local street system shall be LOS C" (page VII-15). Using this criterion the following segment deficiencies are identified:

1. Michigan from Barton to Commerce - LOS F
2. Mt. Vernon from Canal Street to North City Limits - LOS F
3. Mt. Vernon from Barton to DeBerry - LOS E

In the SBEVTM network, Segments 1 and 2 listed above are coded with fewer lanes than called for in City's existing Circulation Element. If these segments had the additional lanes specified in the City's existing Circulation Element, they would operate at LOS C or better.

The deficiency on Mt. Vernon from Barton to DeBerry is due to excess demand caused by: 1) through traffic which travels between Pigeon Pass Road and I-215 via Barton Road and

TABLE A
SUMMARY OF ROADWAY CHANGES

Segment	From	To	Existing Circulation Element	SBEVTM
La Cadena Dr.	North City Limits	Barton Road	6 lanes	4 lanes
Barton Road	I-215	Palm Ave.	6 lanes	4 lanes
Michigan St.	Barton Road	Commerce Way	6 lanes	2 lanes
Commerce Way	Michigan St.	Main St.	4 lanes	2 lanes
Westwood St.	Honey Hill Dr.	East City Limits	2 lanes	0
Honey Hill Dr.	Barton Road	Palm Ave.	2 lanes	0
DeBerry St.	West City Limits	Michigan St.	2 lanes	0
Van Buren St.	West City Limits	Michigan St.	2 lanes	0
Main St.	Michigan St.	Mt. Vernon	2 lanes	4 lanes
Mt. Vernon Ave.	North City Limits	Brentwood	4 lanes	2 lanes

TABLE B
LEVEL OF SERVICE DESCRIPTIONS

LOS	Traffic Flow Conditions	V/C Range
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.	0.00 - 0.60
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.	0.61 - 0.70
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.	0.71 - 0.80
D	High-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.	0.81 - to 0.90
E	Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.	0.91 - 1.00
F	Level-of-Service F. Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Arrival flow exceeds discharge flow.	>1.00

Level of Service definitions derived from the 1985 Highway Capacity Manual, Transportation Research Board.

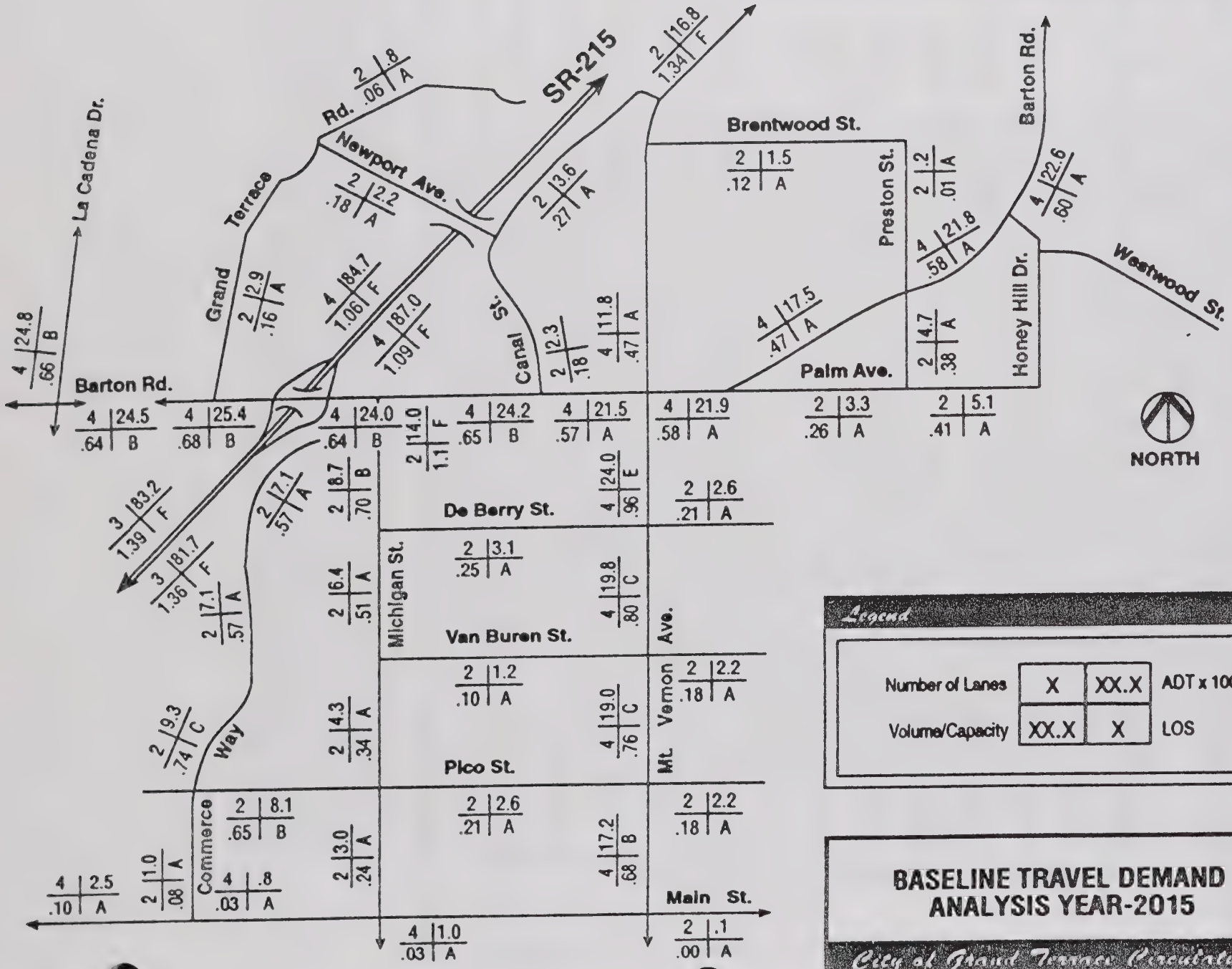
Table C

DAILY SERVICE VOLUME STANDARDS BY LEVEL OF SERVICE

Type of Roadway	Arterial Level of Service*				
	A	B	C	D	E
Arterials					
8 Lanes Divided	45,000	52,500	60,000	67,500	75,000
6 Lanes Divided	33,900	39,400	45,000	50,600	56,300
4 Lanes Divided	22,500	26,300	30,000	33,800	37,500
4 Lanes (Undivided)	15,000	17,500	20,000	22,500	25,000
2 Lanes (Undivided)	7,500	8,800	10,000	11,300	12,500
Freeways					
10 Lanes	120,000	140,000	160,000	180,000	200,000
8 Lanes	96,000	112,000	128,000	144,000	160,000
6 Lanes	72,000	84,000	96,000	108,000	120,000
4 Lanes	48,000	56,000	64,000	72,000	80,000
1 Lane Ramp	12,000	14,000	16,000	18,000	20,000

*Maximum Average Daily Traffic (ADT)

These roadway capacities are "rule of thumb" estimates for planning purposes. The LOS "E" service volumes are estimated maximum daily capacity for respective arterial classifications. Arterial capacity is affected by such factors as intersections (spacing, configuration, and control features), degree of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, vehicle mix (truck and bus traffic), and pedestrian and bicycle traffic.



BASELINE TRAVEL DEMAND ANALYSIS YEAR-2015

FIGURE A

City of Grand Terrace Circulation Update

Mt. Vernon, and 2) cumulative traffic generated by residential areas which access Mt. Vernon. Options to mitigate this system deficiency can include: 1) widen the segment to six lanes, 2) additional turn lanes at intersection bottlenecks, and 3) the redirection of through traffic from Mt. Vernon to Michigan Street or Main Street by means of operational modifications such as signal prioritization. Currently, the property on both sides of this segment is developed, therefore, a full widening to six lanes is not recommended.

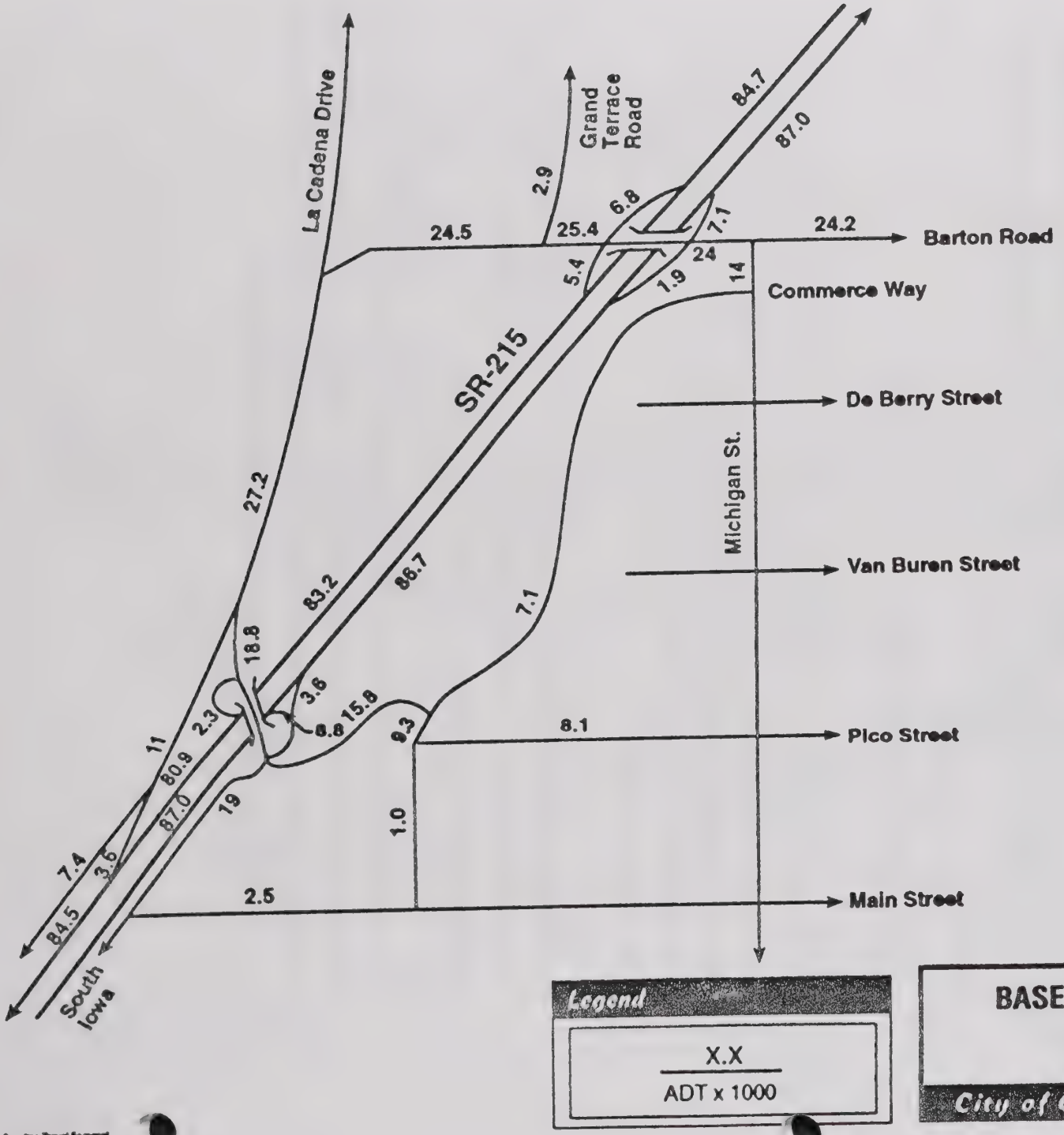
The SBEVTM identifies another system deficiency on I-215. The SBEVTM indicates that the segments in the Grand Terrace Sphere of Influence will operate at LOS F. This deficiency is primarily due to regionally generated through traffic. Regional agencies including SANBAG or Caltrans should be responsible for their mitigation. I-215 has also been identified as deficient in SANBAG's Comprehensive Transportation Plan, and as part of the ongoing of transportation planning process mitigation strategies will be identified.

I-215/INDUSTRIAL ZONE ACCESS

The primary industrial zone in the City of Grand Terrace is located south of Van Buren and west of Michigan. Currently, the primary route of freeway access to this industrial zone is via Michigan and Commerce Way to Barton Road. The City has recommended an additional connector to I-215 which would provide more direct access for traffic generated in the industrial zone.

In the SBEVTM, this connector is shown as a segment connecting Commerce Way north of Pico Street to the I-215 interchange at La Cadena. This connector would divert traffic from Michigan Street, Commerce Way and Barton Road.

Figure B shows the arterial and interchange configuration conceptually represented in the SBEVTM Year 2015 network. It includes the reconfiguration of the La Cadena/Iowa interchange as proposed as part of the I-215 widening project. Figure B also shows ADT forecasts from the SBEVTM for the network in the vicinity of I-215.



Legend

X.X
ADT x 1000

BASELINE TRAVEL FORECAST
I-215 CORRIDOR
YEAR 2015

FIGURE B

City of Grand Terrace Circulation Update

Direct connection to the I-215 interchange at La Cadena\Iowa would facilitate remediation of an incompatibility of the City's existing Land Use and Circulation Elements. The City's Land Use Element shows low density residential development adjacent to Michigan Street and adjacent to Pico Street, west of Michigan Street. If direct access to I-215 is provided via La Cadena\Iowa interchange, the City would be capable of restricting through truck traffic from using Michigan and Pico Streets while retaining adequate truck access to the industrial zone.

The SBEVTM shows there would be adequate capacity at the La Cadena\Iowa and Barton interchanges in the Year 2015. It is assumed that all on and off ramps will be constructed with a single lane only.

ROADS SHARED WITH COLTON

Grand Terrace's existing Circulation Element shows four roadways that are shared with the City of Colton. Table D identifies the designation, the right of way width, curb to curb width and number of lanes of these four roads in both the Grand Terrace and Colton Circulation Elements.

La Cadena Drive - The City of Grand Terrace's Circulation Element calls for widening its portion of La Cadena Drive to six lanes from existing four lanes. Colton's Circulation Element calls for retaining the road as four lanes. The SBEVTM forecast indicate the roadway can be retained at four lanes.

Barton Road - The Grand Terrace Circulation Element calls for the segment east of the Colton segment as a four lane, Major Highway. The Colton segment also is identified as a four lane, Major Highway. The SBEVTM forecasts indicate that four lanes is acceptable.

Mt Vernon Avenue - North of Canal Street, Mt Vernon Avenue is shared by Grand Terrace and Colton. The Grand Terrace Circulation Element calls for a four lane, Secondary Highway. Colton's Circulation Element calls for retaining the roadway as two lanes. The SBEVTM forecasts indicate the roadway should be widened to four lanes.

TABLE D
ROADS SHARED WITH COLTON

	Grand Terrace				Colton			
Road	Designation	R.O.W. Width	Curb to Curb Width	Number of Lanes	Designation	R.O.W. Width	Curb to Curb Width	Number of Lanes
La Cadena Dr.	Major Divided Highway	120 ft.	94 ft.	6	Major Arterial	96 ft.	72 ft.	4
Barton Road	Major Highway Collector	100 ft. 66 ft.	72 ft. 44 ft.	4 2	Major Arterial	88 ft.	64 ft.	4
Mt. Vernon Ave.	Secondary Highway	88 ft.	64 ft.	4	Major Arterial	64 ft.	40 ft.	2
Westwood St.	Collector	66 ft.	44 ft.	2	Local	60 ft.	40 ft.	2

Westwood Street - The City of Grand Terrace Circulation Element designates Westwood Street as a two lane collector. In Colton, Westwood exists as a local street but is not included in the Circulation Element. In addition, Westwood was not included in the SBEVTM highway network. Westwood is not needed to provide system capacity or to provide continuity to the Circulation System and can be deleted from the Grand Terrace Circulation Element.

SUMMARY OF RECOMMENDATIONS

Table E is a summary of recommendations from the baseline analysis for amendment of the City's existing Circulation Element.

TABLE E
RECOMMENDED ACTIONS

Segment	From	To	Recommended Action
La Cadena Dr.	• North City Limits	Barton Rd.	Downgrade to 4 lane, Major Highway
Barton Road	• I-215 • West of La Cadena	Palm Ave.	Downgrade to 4 lane, Major Highway Delete
Michigan St.	• Barton Rd.	Commerce Way	Downgrade to 4 lane, Major Highway
Westwood St.	• Honey Hill Dr.	East City Limits	Delete
DeBerry St.	• East of Mt. Vernon		Delete
Van Buren St.	• East of Mt. Vernon		Delete
Pico St.	• East of Mt. Vernon		Delete
Main St.	• East of Mt. Vernon		Delete
Taylor St.	• East of Mt. Vernon		Delete
Mt. Vernon	• Canal St.	North City Limits	Work with Colton to upgrade to 4 lanes
Unnamed Road	• West City Limits (La Cadena/Iowa Interchange	Commerce Way	Add 4 lane, Major Highway
La Cadena/Iowa Interchange	• At I-215		Work with Comprehensive Transportation Plan(CTP) to include extension to Grand Terrace
I-215	• Grand Terrace Sphere of Influence		Work with Comprehensive Transportation Plan to mitigate

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UPDATE OF THE CITY OF GRAND TERRACE GENERAL PLAN CIRCULATION ELEMENT

MEMORANDUM NO. 4

I-215 FREEWAY ACCESS ANALYSIS

September 1997

This is the fourth of five technical memoranda that constitution the traffic analysis of the Update of the City of Grand Terrace Circulation Element.

The City's General Plan Task Force and City Council have identified a need for this analysis because of concerns about access to the City's primary industrial zone and the in need to ensure adequate freeway ramp capacity to the I-215 in future years.

The purpose of this memorandum is to address the following: 1) summarize the major plans and studies that have been generated to date which address I-215 access to the City of Grand Terrace; 2) to develop an additional concept that builds upon previous studies and which addresses the City's interest of providing a direct connection from the La Cadena/Iowa interchange at I-215 to the City's primary industrial zone; 3) to analyze traffic impacts and construction costs for the provision of I-215 access; and 4) identify impacts if Commerce Way is not extended to Main St.

PREVIOUS STUDIES

Although I-215 access to the City of Grand Terrace has been extensively studied since the mid-1980's there are three recent studies that are most relevant to this issue. These are the following:

1. The I-215 Project Study Report (PSR) which was prepared for the Riverside County Transportation Commission (RCTC) with input from the San Bernardino Associated

Governments (SANBAG) and Caltrans. The purpose of this PSR is to study a proposal for additional high occupancy vehicle (HOV) lanes and interchange improvements on I-215 from SR 60 in Riverside County to Orange Show Road in San Bernardino. The PSR was prepared by the firm of Parsons, Brinkerhoff and was completed in 1993. The PSR recommends modifications to the La Cadena/Iowa and Barton Road interchanges on I-215 and a new road which replaces frontage access at La Crosse Av., north of Barton Road.

2. The Grand Terrace Traffic Mitigation Analysis which was prepared by Fluor Daniel, Inc. for SANBAG and was completed in 1993. This report studied two alternatives for modifications to the La Cadena/Iowa interchange at I-215 to provide an arterial connection to the City of Grand Terrace primary industrial zone. In addition, this report looked at provision of a freeway off-ramp at DeBerry Street.

3. The North/South Corridor Study. This was a cooperative study completed under the direction of SANBAG and included participants from RCTC, Caltrans, the counties of San Bernardino on Riverside and the cities of Grand Terrace, Moreno Valley, Redlands and Loma Linda. This study was completed in 1992. It analyzed alternatives for increasing arterial access between north Riverside County and south San Bernardino County via the Pigeon Pass, Reche Canyon and San Timoteo Canyon Corridors.

I-215 PSR

The I-215 PSR recommended improvements at the La Cadena/Iowa and Barton Road interchanges on I-215. The improvements for the La Cadena/Iowa interchange are by far the most extensive. These include the following:

- Remove existing interchange and ramps.
- Replace southbound loop off-ramp with southbound slip off-ramp.
- Replace southbound slip on-ramp with southbound loop on-ramp.
- Replace northbound loop off-ramp with northbound slip off-ramp.
- Realign northbound slip on-ramp.

In addition, the PSR proposes to lengthen the High Grove Railroad over crossing to accommodate the widening of I-215. The proposed reconstruction of the La Cadena/Iowa interchange at I-215 as identified in the PSR would be incompatible with the concept of providing an arterial extension from the interchange to Commerce Way.

As part of their review of the draft PSR, City staff requested an additional connector to I-215. In response, the PSR sponsoring agencies proposed to improve the intersection of Main Street at Iowa to improve traffic flow to the La Cadena/Iowa interchange. The City staff request for consideration of an extension from this interchange to Commerce Way was considered out of scope of the PSR by the PSR sponsoring agencies.

GRAND TERRACE TRAFFIC MITIGATION ANALYSIS

This report by Fluor Daniel was prepared in response to concerns of the City of Grand Terrace. Namely the following:

1. Traffic impacts on Grand Terrace arterials due to improvements that were proposed in the North/South Corridor Study. This study called for widening of Pigeon Pass Road which would cause an increase in traffic on these arterials.

2. The City's interest to have direct access to I-215 for its primary industrial area.

The major findings of this report are as follows:

1. To deal with North/South Corridor impacts, the report considered realignment of Main Street to tie it into Iowa at a point closer to the I-215 interchange. The alignment that was studied would have impacted the Southern California Edison Substation, a railroad crossing, a motel and several other businesses. The report concludes that this realignment would be less beneficial than planned improvements to Main Street on its existing alignment per the I-215 PSR.

2. The report identified several constraints which would impede the extension of Commerce Way to the La Cadena/Iowa interchange at I-215. These include the

substation high power electrical lines, the High grove railroad tracks and several businesses.

3. The report identified two alternatives for the redesign of the La Cadena/Iowa interchange to facilitate a direct connection to Commerce Way. As part of the Grand Terrace Circulation Update Study, the more feasible of these two alternatives has been further refined and is discussed later in this memorandum.

4. The report also considered a northbound hook ramp into Commerce Way north of DeBerry Street. This connection was found not meet Caltrans design criteria because it would shorten the separation with the northbound on-ramp from the La Cadena/Iowa interchange. In addition, it would create an isolated off-ramp which is also inconsistent with Caltrans design criteria.

The analysis concludes that all alternatives have significant design problems and that further evaluation is required to develop a feasible solution.

NORTH/SOUTH CORRIDOR STUDY

As previously noted, the North/South Corridor Study recommended improvement and widening of Pigeon Pass Road which connects Grand Terrace with the City of Moreno Valley. The study indicated that traffic could significantly increase on Mount Vernon Road, Main Street and Barton Road as a result of the Pigeon Pass Road improvements.

The year 2015 forecast of the San Bernardino East Valley Traffic Modal (SBEVTM) do not address the prospective traffic impacts of the improvements recommended in the North/South Corridor Study because these improvements were never adopted.

However, it is evident from the traffic forecasts which are discussed later in this memorandum that there will be significant surplus capacity on the arterials and freeway ramps that would receive additional traffic caused by the North/South Corridor improvements.

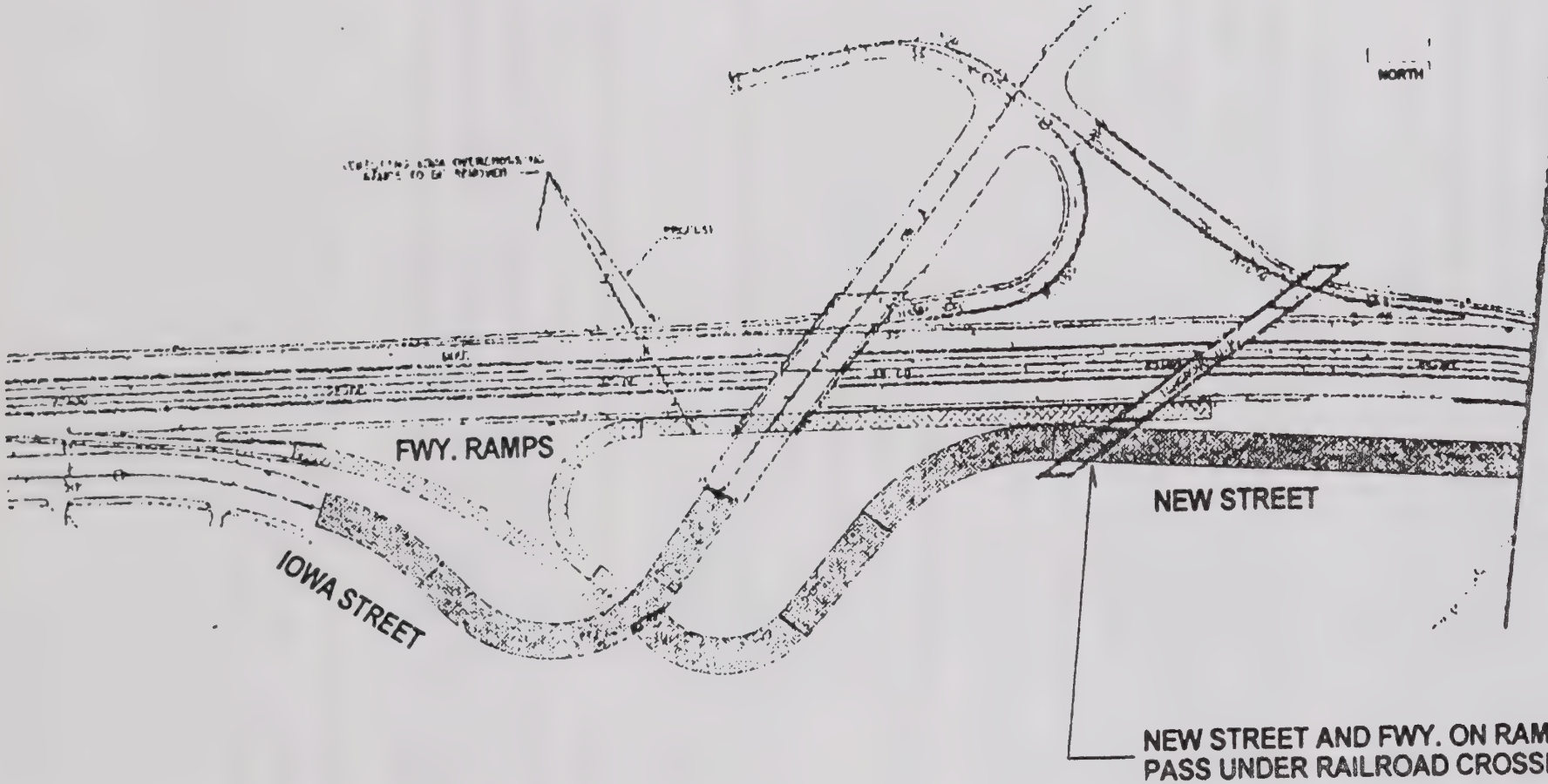
REFINED DIRECT ACCESS SCENARIO

The Fluor Daniel study identified two alternatives that would facilitate the construction of arterial extension from the La Cadena/Iowa Interchange to Commerce Way. One of these was determined to be more feasible and was refined as part of this General Plan Update Analysis. This scenario is shown as Figures 1A and 1B.

This scenario entails the construction of a Type L-7 interchange with a northbound loop on-ramp. The existing alignment of Iowa Avenue at the interchange would be pulled to the east to facilitate reconstruction of the northbound on- and off-ramp. Due to the realignment of Iowa Avenue, the existing open channel east of the interchange would be replaced by a box culvert. The realignment would also entail the taking of over 160,000 square feet on which are sited several businesses. (This taking would not be required for the reconstruction of the La Cadena/Iowa Interchange as proposed in the I-215 PSR.)

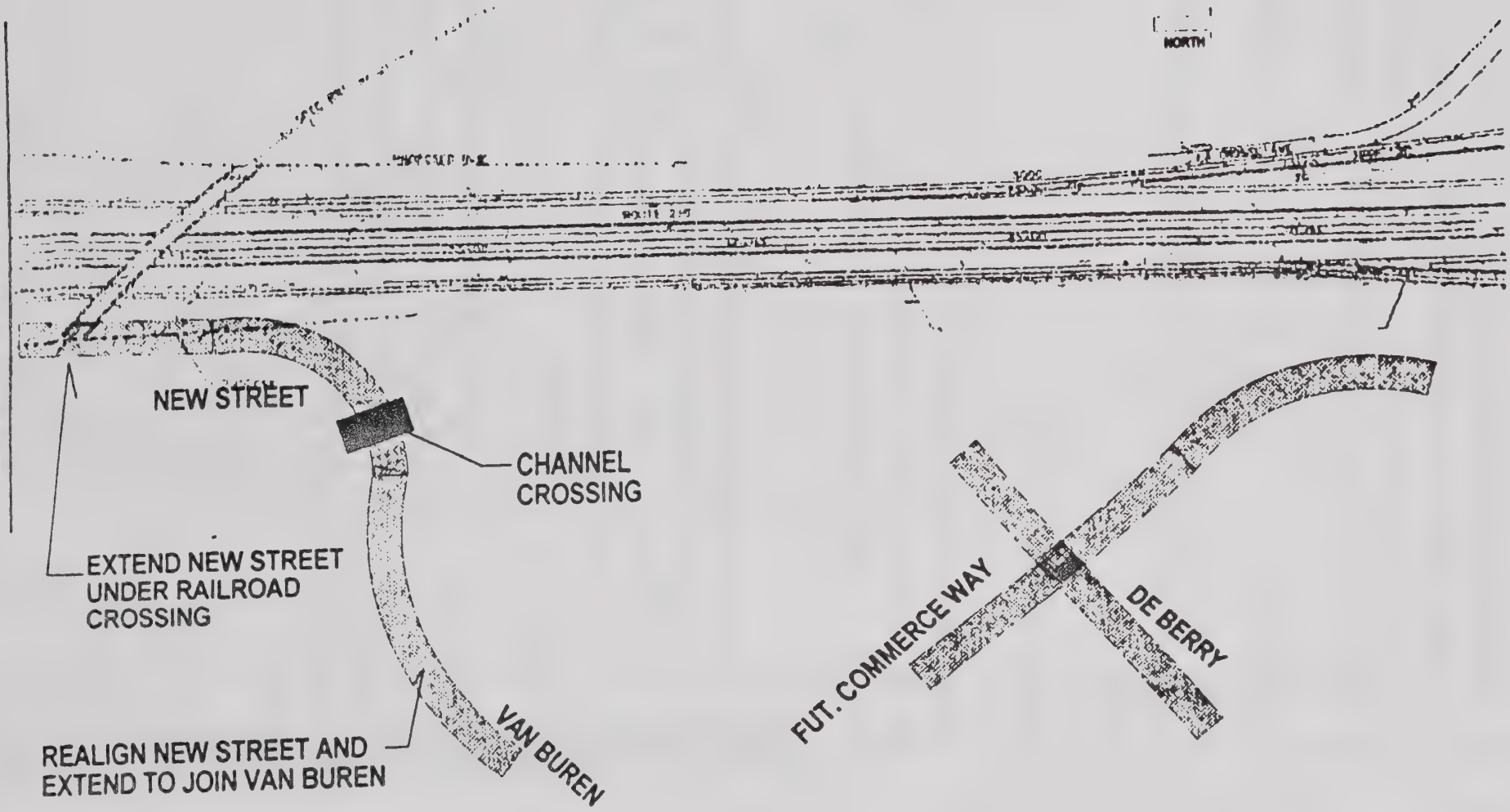
Iowa would be extended to Commerce Way from the point where it intersects with the I-215 on- and off-ramps at La Cadena. As proposed in the Fluor Daniel report the Iowa Extension would then over cross the Highgrove and Southern Pacific Railroad lines and proceed to connect with Commerce Way. The Fluor Daniel reports notes that the Highgrove railroad crossing may not be feasible due to the presence of high powered electrical lines that parallel the railroad.

Our refinement of the Fluor Daniel alternative entails lengthening the Highgrove and Southern Pacific Railroad over crossings of I-215 to provide sufficient width for the Iowa Extension to Commerce Way which would cross under the railroad over crossings, parallel to the freeway. The Iowa Extension would proceed on a northeasterly alignment to intersect with Commerce Way at its intersection with Van Buren.



1-215/ LA CADENA INTERCHANGE CONCEPT

FIGURE 1A



I-215/LA CADENA INTERCHANGE CONCEPT

FIGURE 1B

The minimum cost for this scenario are as follows:

1.	3,500 feet arterial extension	$1,523,000
2.	200 feet extension of railroad over crossing	$3,000,000
3.	250 feet of box culvert	$3,250,000
4.	160,000 square feet commercial industrial land	$1,600,000
	Total Cost	$9,373,000

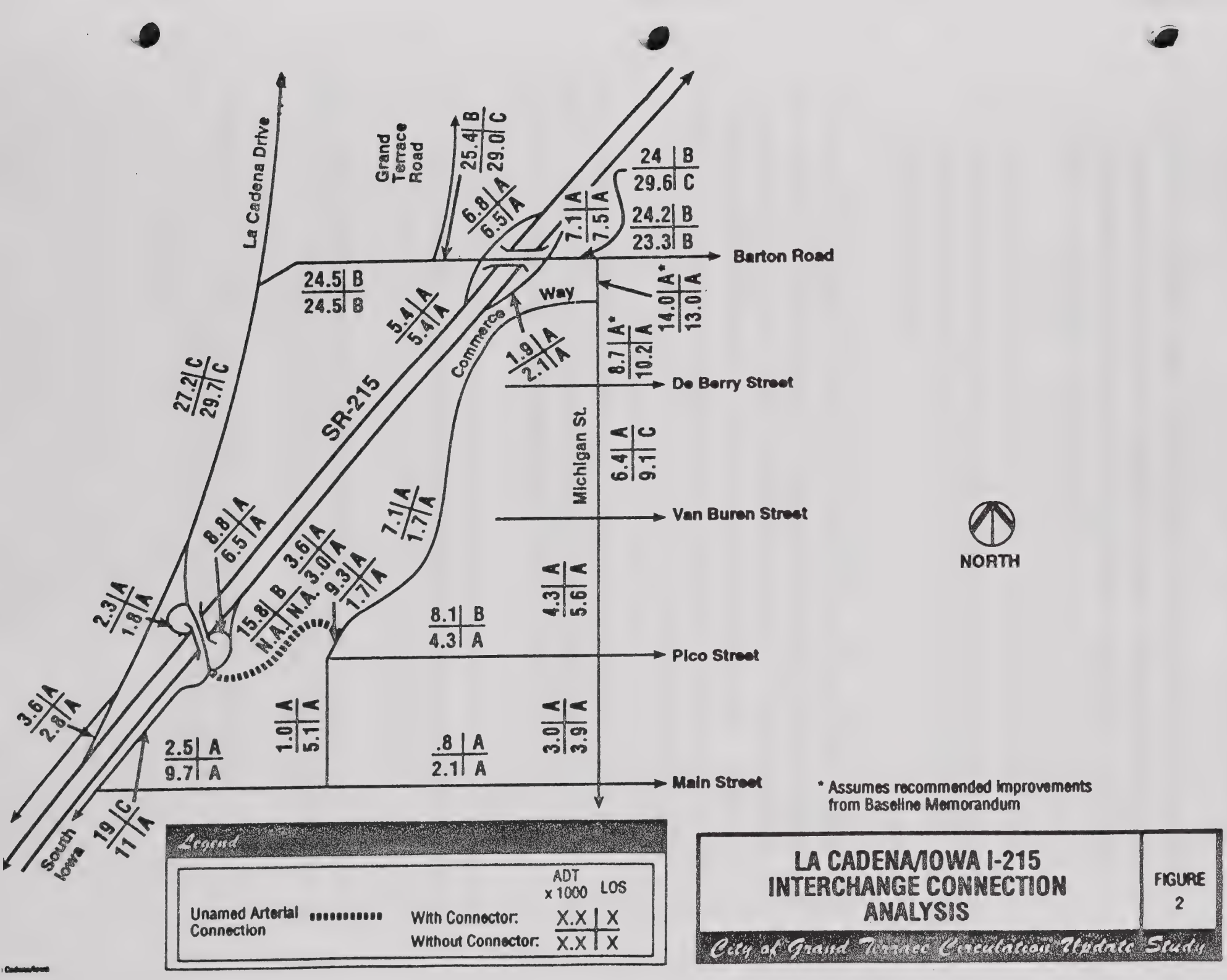
This cost estimate does not include the cost for compensating existing businesses to relocate.

TRAVEL DEMAND ANALYSIS

A travel demand analysis has been performed to address the following questions: Is the arterial extension from the La Cadena/Iowa Interchange at I-215 to Commerce Way necessary to mitigate any future capacity deficiencies in the Grand Terrace Circulation System?

Figure 2 shows an analysis of two scenarios. The first scenario is with the Iowa Extension and the second scenario is without the Iowa Extension. Both scenarios asume that the extension of Commerce Way to main Street will be completed. Figure 2 shows Average Daily Traffic (ADT) volumes and Level of Service (LOS) conditions for both of these scenarios for year 2015 conditions.

This figure shows that the circulation system generally will operate at a high LOS with little or no congestion for either scenario. These operating conditions are applicable to the freeway ramps at Barton Road and at La Cadena/Iowa. In summary, the arterial connection will not provide any significant mitigation to future capacity deficiencies in the system.



* Assumes recommended improvements from Baseline Memorandum

LA CADENA/IOWA I-215 INTERCHANGE CONNECTION ANALYSIS

FIGURE 2

City of Grand Terrace Circulation Update Study

I-215 INTERCHANGE AT BARTON ROAD

Currently, this interchange is configured as a Type L1, compact diamond. The I-215 PSR proposes to maintain the Type L1 configuration. However, to accommodate widening of I-215 all ramps will be realigned and reconstructed. Travel demand forecasts from Figure 2 indicate that single lanes for all four ramps will provide adequate capacity for future year traffic.

NORTH-SOUTH CORRIDOR IMPACT ANALYSIS

Issue:

Analysis of the Grand Terrace General Plan Circulation System has not identified significant benefit of the extension of Iowa from La Cadena/Iowa Interchange of I-215 to Commerce Way. The City could save at least $9.37 million if this roadway is not constructed. However, there is a concern that this roadway would be needed in light of recommendations from the North-South Corridor Study which could impact the Grand Terrace Circulation System.

Although the study has been put on hold indefinitely, the North-South Corridor Study has proposed major circulation system improvements that would cause an increase in traffic volumes on arterials in Grand Terrace. The issues which this analysis addresses are as follows:

1. What specific impacts North-South Corridor traffic have on the Grand Terrace Circulation System?

2. Will the Iowa Extension relieve traffic congestion on the Grand Terrace Circulation System that may be caused by North-South Corridor traffic?

3. Will improvements other than the Iowa Extension be needed to mitigate capacity deficiencies caused by North-South Corridor traffic?

Methodology

Two forecast resources were used to identify the traffic impacts of the North-South Corridor. These are: (1) Data from the travel forecast model developed for the North-South Corridor Study, and (2) the SBEVTM. The forecast year for this analysis is the year 2015.

A review of the North-South Corridor Study indicates that Grand Terrace would be impacted by increases in traffic volume caused by improvements proposed for Reche Canyon Road and Pigeon Pass Road. The extent of these impacts was identified by the following methodology:

1. The increase in traffic on Reche Canyon Road and Pigeon Pass Road due to the North-South Corridor was identified using North-South Corridor model forecast data for 2015. The increase of ADT was found to be 4,500 for Reche Canyon Road and 9,700 for Pigeon Pass Road.

2. The directional distribution pattern of the additional traffic was determined using select link traffic forecast assignments from the SBEVTM. It was assumed that the additional traffic would have the same directional distribution pattern as the traffic on the selected links from the SBEVTM. The directional distribution pattern derived from the select link assignments are summarized on Table 1.

3. The additional traffic was assigned to the circulation system. Figure 3 shows the assignment for the additional traffic from Reche Canyon Road. Figure 4 shows the assignment for the additional traffic from Pigeon Pass Road.

4. The additional traffic was added to the 2015 traffic forecast that was analyzed in Memorandum No. 3 Baseline Analysis of the Grand Terrace Circulation Element Update Study.

5. These forecasts were analyzed to determine prospective LOS impacts on the arterials of the Grand Terrace General Plan Circulation System. This analysis

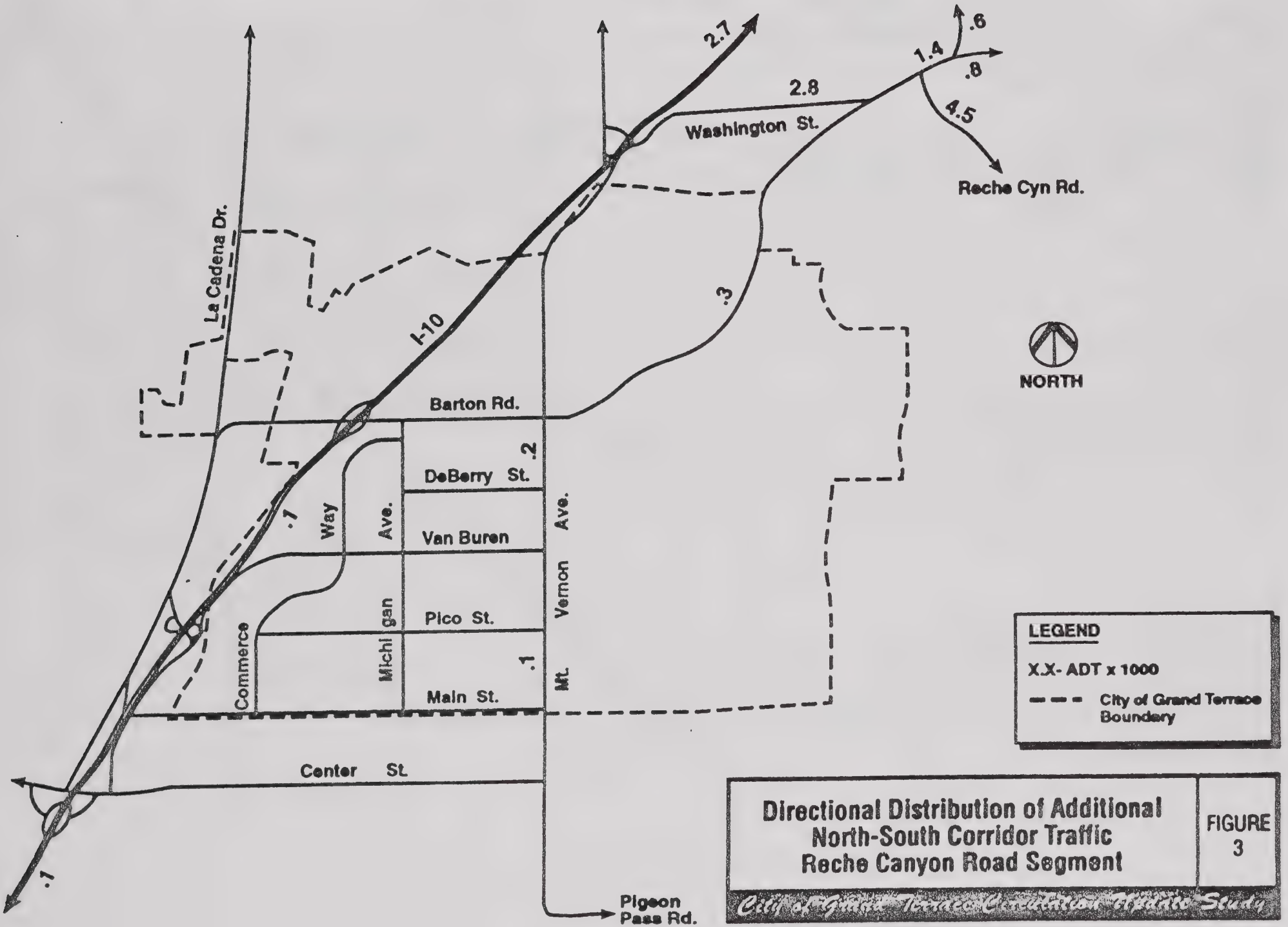
Table 1
Grand Terrace Circulation Element Update Study

DIRECTIONAL DISTRIBUTION OF ADDITIONAL NORTH-SOUTH CORRIDOR TRAFFIC

Pigeon Pass Road Segment:		
Direction	**Percentage**	**ADT**
South I-215	35%	3,395
North I-215	37%	3,590
La Cadena	4%	390
Barton East	3%	290
Grand Terrace Internal Capture:	21%	2,040
Total	100%	9,700*

*Sum does not add to 9,700 due to rounding.

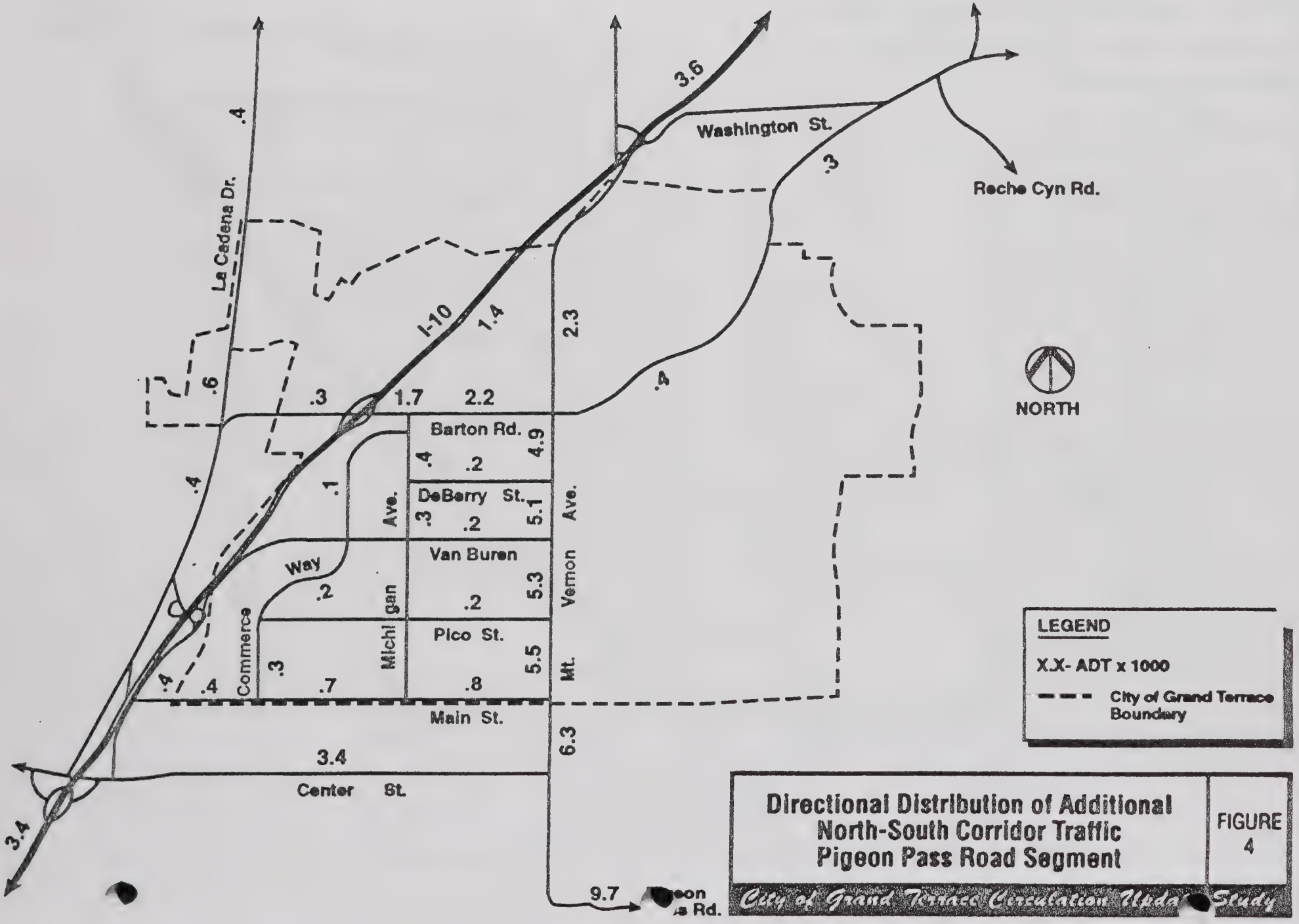
Reche Canyon Road Segment:		
Direction	**Percentage**	**ADT**
South I-215	2%	90
Grand Terrace Internal Capture:	5%	225
External to Grand Terrace	93%	4,185
Total	100%	4,500



Directional Distribution of Additional North-South Corridor Traffic Reche Canyon Road Segment

FIGURE 3

City of Grand Terrace Circulation Update Study



Directional Distribution of Additional North-South Corridor Traffic Pigeon Pass Road Segment

FIGURE 4

City of Grand Terrace Circulation Update Study

Table 2

Grand Terrace Circulation Element Update Study
NORTH-SOUTH CORRIDOR TRAFFIC IMPACT ANALYSIS

Segment	Scenario											
	A Without Iowa Extension Without North-South Corridor			B With Iowa Extension Without North-South Corridor			C Without Iowa Extension With North-South Corridor			D With Iowa Extension With North-South Corridor		
	ADT*	V/C	LOS	ADT*	V/C	LOS	ADT*	V/C	LOS	ADT*	V/C	LOS
1) Barton-Grand Terrace to I-215	29.0	.77	C	25.4	.68	B	29.3	.78	C	25.7	.69	B
2) Barton -I-215 to Michigan	29.6	.79	C	24.0	.64	B	31.3	.83	D	25.7	.69	B
3) Barton -Michigan to Canal	23.3	.62	B	24.2	.65	B	25.5	.68	B	26.4	.70	C
4) Iowa Extension- Iowa to Commence Way	-n/a-			15.8	.63	B	-n/a-			15.8	.63	B
5) Main St.- Iowa to Commerce Way	9.7	.39	A	2.5	.10	A	10.1	.40	A	2.9	.12	A
6) Iowa- I-215 to Main St.	11.0	.44	A	19.0	.76	C	11.4	.46	A	19.4	.78	C
7) Commerce Way- Pico St. to Main St.	5.1	.20	A	1.0	.04	A	5.4	.22	A	1.3	.05	A
8) Mt. Vernon- Barton to DeBerry	24.1	.96	E	24.0	.96	E	29.2	1.17	F	29.1	1.16	F
9) Mt. Vernon -Pico to Main St.	19.2	.77	C	17.2	.68	B	24.8	.99	E	22.8	.91	E
10) I-215 -North of Barton Rd.	169.3	1.06	F	171.7	1.07	F	170.7	1.07	F	173.1	1.08	F

* x 1000

assumed that all improvements would be in place that were recommended in Memorandum No. 3. The results of this link analysis are summarized on Table 2.

Analysis

Analysis of the data shown on Figures 3 and 4 and Tables 1 and 2 indicates the following:

1. The Grand Terrace Circulation System would be impacted more by traffic from Pigeon Pass Road than from Reche Canyon Road traffic. Approximately 300 vehicles per day would be added to the Grand Terrace Circulation System due to Reche Canyon Road improvements. Most of the additional traffic attributable to the Reche Canyon Road improvements would be diverted to streets in Colton and Loma Linda.

2. Traffic on the Grand Terrace Circulation System will increase by approximately 6,300 ADT due to improvements on Pigeon Pass Road. Mt. Vernon Avenue and Barton Road and, to a lesser extent, Main Street.

3. Approximately 3,400 ADT accessing I-215 south from Pigeon Pass Road will bypass Grand Terrace via Center Street in Riverside County.

4. Approximately 3,600 ADT accessing I-215 north will impact Mt. Vernon Avenue and Barton Road.

5. The shortest route for Pigeon Pass Road traffic accessing I-215 north is via Mt. Vernon Avenue. This route is 2.63 miles from Pigeon Pass Road at Center to I-215 at Mt. Vernon. The approximate travel time on this route is 6 minutes.

6. The next shortest route for Pigeon Pass Road traffic accessing I-215 north is via Mt. Vernon Avenue to Barton Road and from Barton Road to the Barton Road I-215 interchange. This route is 3.55 miles from Pigeon Pass Road at Center to I-215 at analysis Mt. Vernon Avenue. Approximately half this route is on the freeway therefore the travel time is only slightly greater than on the Mt. Vernon direct route.

7. The route distance from Pigeon Pass Road at Center to I-215 at Mt. Vernon via Main Street and Iowa to the LaCadena/Iowa Interchange at I-215 is 4.68 miles. Approximate travel time via this route is 7.9 minutes. The distance and travel time on this route are significantly greater than on the other routes describe previously.

8. The proposed Iowa Extension from the LaCadena/Iowa Interchange at I-215 to Commerce Way will create a route of greater circuity for Pigeon Pass Road traffic accessing I-215 north. This proposed roadway would have a northeasterly orientation that significantly increases the circuity for Pigeon Pass Road traffic traveling to I-215 north. In addition, this route would have two additional intersections (Pico at Commerce Way and Van Buren at Commerce Way) that could be signalized and significantly increase travel time.

9. LOS would deteriorate on Mt. Vernon and Barton Road as the result of the additional traffic accessing I-215 north from Pigeon Pass Road. Mt. Vernon from Main Street to Barton Road will operate at LOS E and F conditions. It will require mitigation to meet the City's LOS standard.

10. The segment of Barton Road from I-215 to Michigan will operate at LOS D as a result of the Pigeon Pass Road traffic. However, if the Iowa Extension to Commerce Way is constructed approximately 5,600 ADT will be diverted from Barton Road and cause LOS to be improved to C.

Summary of Findings

The proposed North-South Corridor improvements will significantly impact the Grand Terrace Circulation System. The impact would be due to improvements to Pigeon Pass Road which would cause increases in traffic primarily on Mt. Vernon Avenue and Barton Road. Mitigation will be required on these roadways in order to maintain the City's LOS standard.

Mount Vernon is a road of regional significance which provides the most direct route of access from Pigeon Pass Road to I-215. As such, it would be the one roadway in Grand

Terrace that is most greatly impacted by North-South Corridor improvements on Pigeon Pass Road. Use of Mount Vernon as a regional arterial with high traffic volumes is incompatible with the residential land uses that directly front the roadway.

The proposed Iowa Extension from the Iowa/LaCadena Interchange at I-215 to Commerce Way will mitigate deficient LOS conditions on Barton Road but will not have significant beneficial effect on LOS on Mt. Vernon Avenue. The Barton Road segment is forecasted to marginally deficient as a result of the North-South Corridor impacts. Less costly measures such as intersection improvements could mitigate these impacts. In light of the high cost of the Iowa Extension this improvement is not considered a cost effective measure to mitigate the traffic impacts of the North-South Corridor improvements.

COMMERCE WAY EVALUATION

The purpose of this evaluation is to identify the impact to Grand Terrace if Commerce Way is not extended to Main St.

Background

Commerce Way is shown in the City's Master Plan of Streets and Highways as a Secondary Highway. It will extend from its current terminus, west of Michigan southerly. South of Van Buren it will follow a reverse curve, westerly. It will connect at Main St., approximately on half mile west of Michigan, replacing the existing two lane Taylor St.

Commerce Way will provide access to a large vacant area, south of Barton and east of I-215 that is planned for general commercial and industrial development.

Traffic Impact Analysis

Table 3 summarizes daily traffic volume, volume / capacity, and LOS conditions for two Year 2015 scenarios: 1) with the Commerce Way extension, and 2) without the Commerce Way extension.

Table 3
Grand Terrace Circulation Element Update Study
COMMERCE WAY TRAFFIC IMPACT ANALYSIS

Segment	Scenario					
	With Commerce Way Without Iowa Extension Without North-South Corridor			Without Commerce Way With Iowa Extension Without North-South Corridor		
	ADT*	V/C	LOS	ADT*	V/C	LOS
1) Barton- Grand Terraceto I-215	29.0	.77	C	29.0	.77	C
2) Barton- I-215 to Michigan	29.6	.79	C	30.1	.80	C
3) Barton- Michigan to Canal	23.3	.62	B	23.1	.62	B
4) Main St.- Iowa to Commerce Way	9.7	.39	A	9.0	.36	A
5) Iowa- I-215 to Main St.	11.0	.44	A	11.9	.48	A
6) Commerce Way (Taylor)-Pico to Main	5.1	.20	A	4.4	.35	A
7) Michigan - Barton to Commerce Way	13.0	.35	A	10.7	.29	A
8) Michigan - Pico to Main	3.9	.31	A	3.4	.27	A
9) Pico - Commerce (Taylor) to Michigan	3.2	.26	A	4.1	.33	A
10) Mt. Vernon- Barton to DeBerry	24.1	.96	E	24.1	.96	E
11) Mt. Vernon- Pico to Main St.	19.2	.77	C	19.6	.78	C
12) I-215 - South of Barton Rd.	162.7	1.02	F	163.6	1.02	F

* x 1000

Table 3 indicates no significant impact on traffic volumes and LOS due to the Commerce Way extension. This is due to an anomaly in the SBEVTM which was discovered as part of this evaluation of Commerce Way.

The SBEVTM has no centroid connectors which directly load onto Commerce Way. This means the model is not assigning traffic generated by adjacent existing and planned development onto Commerce Way. In the model, traffic generated by this development is primarily loading directly onto Michigan. As a result of this anomaly, the SBEVTM is understating the significance of Commerce Way to the circulation system.

Other Benefits

The Commerce Way extension will have these other benefits:

1. Commerce Way will provide direct access to the City's largest undeveloped Commercial General and Industrial areas. If the extension is not constructed, traffic will access this area via Pico, Van Buren, and DeBerry which are streets fronted by residential development. Commercial and industrial traffic, including truck traffic, will impact residential areas.

2. Commerce Way will be spaced at approximately one half mile west of Michigan on Main St. This is considered appropriate spacing of arterials in suburban and low density urban settings.

RECOMMENDATIONS

1. The City should discontinue consideration of the Iowa Extension from the La Cadena\Iowa interchange at I-215 to Commerce Way. It is not a cost effective improvement with respect to its capability to mitigate any circulation system deficiencies such as those that may be caused by proposed North-South Corridor Study improvements on Mt. Vernon or Barton Road. The only benefit of the Iowa Extension is that it would provide more direct access to the City's primary industrial area.

2. As part of the development of the I-215 widening, and reconstruction of the La Cadena\Iowa interchange, the City should work with SANBAG and Caltrans to ensure that Iowa is widened to four lanes, north of Main Street. In additon, the intersection of Iowa at Main Street should be improved to provide adequate capacity for future traffic demand, including the high volume of large truck traffic that is anticipated at this intersection.

3. If recommendations of the North-South Corridor are ever adopted, the City should ensure that the project sponsors provide mitigation to traffic impacts on City streets including Mt. Vernon and Barton Road.

4. Commerce Way should be retained in the City's Master Plan of Streets and Highways.

5. The City should work with the City of San Bernardino to correct network anomalies in the SBEVTM to improve traffic forecasting for the City.

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CITY OF GRAND TERRACE
CIRCULATION ELEMENT UPDATE STUDY
TECHNICAL MEMORANDUM NO. 5
CIRCULATION IMPROVEMENT FEE PROGRAM

February 1998

INTRODUCTION

This is the fifth Technical Memorandum of the City of Grand Terrace Circulation Element Update Study. The purpose of this memorandum is to provide the technical data necessary for the City to establish a bridge and thoroughfare fee program in accordance with California Government Code 66000, et. seq.

Development of the fee program entails the following major tasks:

1. Identify improvements to be constructed with funds generated by the fee program.

2. Estimate the cost of these improvements.

3. Quantify the amount of new development which will be required to pay the fee.

4. Establish a methodology to allocate of the fee to a new development in accordance with the Nexus requirements of Section 66000 of the California Government Code..

CIRCULATION IMPROVEMENTS

The circulation improvements that are necessary to complete the City's Circulation Element are listed on Table A. This list is consistent with the recommendations of the baseline analysis from Technical Memorandum No. 4.

In addition, Table B list arterial intersections on the City's Circulation Element which warrant signalization by the year 2015. Signalization of these intersections can be funded by the Circulation Improvement Fee Program. The 2015 ADT forecast from the baseline analysis from Technical Memorandum No. 4 were used to determine the future year signal warrants identified on Table B.

COST ESTIMATES

The cost estimates for Circulation Element improvements are shown on Table C. These cost estimates have been developed with assistance from the City of Grand Terrace Public Work's staff and consultants. Two of the improvements listed on Table A can be required to be constructed as conditions of approval on new development. These improvements include Main Street from Michigan to 650 feet west, and Commerce Way from Pico to Main Street. It is assumed that future development adjacent to these improvements will be conditioned to provide them, therefore, they have been excluded from the cost estimates to be funded by the fee program.

Table A
GRAND TERRACE CIRCULATION ELEMENT UPDATE
IMPROVEMENTS TO COMPLETE THE CIRCULATION ELEMENT

Street	Location	Improvement	Length	Add. Pavement	Add. r.o.w.	Comments
1. Barton Rd.	S.P.R.R. to I-215 Overcrossing	Upgrade to Major Highway	1,350 ft	28 ft	40 ft	
2. Barton Rd.	I-215 Overcrossing	Upgrade to Major Highway	380 ft	28 ft	-	Reconstruct Overcrossing
3. Barton Rd.	Honey Hill Dr. to North East City Limits	Upgrade to Major Highway	1,500 ft eastbound 2,250 ft westbound	19 ft 19 ft	-	Significant earthwork required
4. Michigan St.	Barton Rd. to Commerce Way	Upgrade to Major Highway	350 ft	34 ft	32 ft	
5. Michigan St.	Commerce Way to DeBerry St.	Upgrade to Secondary Highway	850 ft	22 ft	20 ft	200 ft. south of Commerce Way, westside is vacant
6. Main St.	S.F.R.R. to S.P.R.R.	Upgrade to Secondary Highway	680 ft	12 ft	-	Westbound direction only
7. Main St.	650 ft west of Michigan to Michigan	Upgrade to Collector	650 ft	10 ft	4 ft	Westbound direction only
8. Mt. Vernon Ave.	Raven Way to Pico St.	Upgrade to Secondary Highway	810 ft	10 ft	11 ft	
9. Mt. Vernon Ave.	Barton Rd. to 700 ft north of Minona	Upgrade to Secondary Highway	1,300 ft	10 ft	11 ft	Northbound direction only

10. Mt. Vernon Ave.	Grand Terrace Rd. (City entry) to 300 ft south	Upgrade to Secondary Highway	300 ft	10 ft	11 ft	Southbound direction only, Storm drain and raised median to be provided.
11. Commerce Way	900 ft. North of De Berry St to Pico	Construct Secondary Highway	3,760 ft	64 ft	88 ft	Alignment is on vacant land
12. Commerce Way	Pico to Main St.	Construct Secondary Highway	1,240 ft	64 ft	88 ft	May encroach on existing develooment

2/98

Table B
ARTERIAL INTERSECTIONS WARRANTING FUTURE SIGNALIZATION

1) Barton @ Grand Terrace
2) Barton @ Palm
3) Barton @ Honey Hill
4) Michigan @ Commerce Way
5) Mt. Vernon @ Canal
6) Mt. Vernon @ DeBerry
7) Mt. Vernon @ Van Buren
8) Mt. Vernon @ Pico

* Intersections not listed by priority

Table C							
COST TO COMPLETE CIRCULATION ELEMENT STREETS (EXCLUDES DEDICATIONS)							
Street:	**From:**	**To:**	**r.o.w. :**	**Roadway :**	**Curb & gutter:**	**Other:**	**Sub-total:**
Barton Rd.	SP.R.R.	I-215 Overcrossing	$540,000.00	$170,100.00	$32,400.00	$0.00	$742,500.00
Barton Rd.	I-215	n.a.	$0.00	$0.00	$0.00	$1,440,000.00	$1,440,000.00
Barton Rd.	Honey Hill Dr.	N.E. City Limits	$0.00	$641,250.00	$0.00	$75,000.00	$716,250.00
Michigan St.	Barton Rd.	Commerce Way	$22,400.00	$53,550.00	$8,400.00	$0.00	$84,350.00
Michigan St.	Commerce Way	DeBerry St.	$30,000.00	$74,250.00	$18,000.00	$0.00	$122,250.00
Main St.	S.F.R.R.	S.P.R.R.	$0.00	$36,720.00	$8,160.00	$0.00	$44,880.00
Main St.	"650 ft. west of Michigan	Michigan St.	$0.00	$0.00	$0.00	$0.00	$0.00
Mt. Vernon Ave.	Pico St.	Raven Way	$17,820.00	$36,450.00	$19,440.00	$0.00	$73,710.00
Mt. Vernon Ave.	Barton Rd.	700 ft north of Minona	$28,600.00	$58,500.00	$15,600.00	$5,000.00	$107,700.00
Mt. Vernon Ave.	Grand Terrace Rd.	300 ft. south	$6,600.00	$13,500.00	$3,600.00	$170,600.00	$194,300.00
Commerce Way	900 ft. North of De Berry	Pico	$0.00	$0.00	$0.00	$0.00	$0.00
Commerce Way	Pico	Main St.	$1,091,200.00	$357,120.00	$29,760.00	$100,000.00	$1,578,080.00
		Sub-total:	$1,736,620.00	$1,441,440.00	$135,360.00	$1,790,600.00	$5,104,020.00
				"25 % Design and contingency			$1,276,005.00
				Grand total:			$6,380,025.00

Table D shows the cost estimates to complete arterial signals that would be warranted in the future. All of these intersections which will be signalized are entirely within the City of Grand Terrace. Therefore, cost for these signals cannot be shared with adjacent jurisdictions.

LAND USE ESTIMATES

Table E shows the land use estimates for the City of Grand Terrace for existing and general plan build out conditions. These statistics were provided with assistance from the City's planning staff. Table E also shows the difference between existing and general plan land uses. These are the new land uses that will be developed in the future and will be responsible for payment of the proposed circulation improvement fees.

For the purpose of the fee program six categories of land uses are used. These land uses and the corresponding parameter which is used to calculate trip generation and fees are listed as follows:

Land Uses	Parameter
Low Density Residential (density less than 3.6 dwelling units per acre)	Number of dwelling units
Medium Density Residential (density greater than or equal to 3.6 dwelling units per acre)	Number of dwelling units
Retail Commercial	1,000 square feet gross leasable area (GLA)
Industrial	Acres
Office Professionals	1,000 square feet gross floor area (GFA)

Table D		
COST TO CONSTRUCT ARTERIAL SIGNALS		
	City Responsibility:	
	Fraction:	Dollar:
1) Barton @ Grand Terrace	1.00	$130,000
2) Barton @ Palm	1.00	$130,000
3) Barton @ Honey Hill	1.00	$130,000
4) Michigan @ Commerce Way	1.00	$130,000
5) Mt. Vernon @ Canal	1.00	$130,000
6) Mt. Vernon @ DeBerry	1.00	$130,000
7) Mt. Vernon @ Van Buren	1.00	$130,000
8) Mt. Vernon @ Pico	1.00	$130,000
Sub-total		$1,040,000
*25% Design & contingencies		$260,000
Grand total		$1,300,000

Table E				
LAND USE STATISTICS - CITY OF GRAND TERRACE				
		Buildout	New	Existing
Use	Trip Generation Parameter	Land Uses	Land Uses	Land Uses
Residential				
Low	Dwelling Units	3310	189	3121
Medium	Dwelling Units	1855	269	1586
General Commercial				
Retail	TSF-GLA	1255.70	839.39	416.31
Indust				
Light Industrial				
Total Industrial	Acres	193.31	126.68	66.63
Office Professional	TSF-GFA	315.81	210.08	105.73

The largest vacant area in the City consist of 46 acres located east of I-215, north of Main Street and west of Michigan Avenue. This area is zoned general commercial (GC). For the purpose of this analysis it is assumed that this area will develop at approximately 40 percent retail and 60 percent industrial.

The land use estimates shown Table E assume that all existing uses on underutilized land will be redeveloped in accordance with approved zoning.

TRIP SHARE ANALYSIS/FEE ALLOCATION FACTORS

The proposed circulation improvement fees are based on the number of daily trips generated by new development. These fees must be proportional to the impact that new development has on the circulation system. Table F quantifies the number of daily trips that are forecasted to use the City's arterial circulation system in the year 2015. These data exclude through trips that will exclusively utilize I-215.

For the purpose of fee calculation, trips are classified as follows:

Existing Trips - Trips generated by existing development

Through Trips - Trips that begin and end outside the City of Grand Terrace

New Trips - Trips that will be generated by future development in the City of Grand Terrace

Table F		
TRIP SHARE ANALYSIS		
	ADT:	Fraction:
Thru Arterial Trips	220000	0.66
Local Trips	111400	0.34
Existing Trips	62800	0.19
New Trips	48600	0.15
Total Arterial Trips	331400	1.00

As indicated by Table F, 15 percent of all trips on the City's arterial circulation system will be generated by new development. Therefore, the circulation fee should raise 15 percent of the total cost of future circulation improvements.

The fee allocation factors shown on Table F are used to calculate the fee that are recommended to be charged to new development on a per unit basis. These factors are applied to the total cost of improvements that will be charged to new development. The factors take into account the quantity of new development for each land use class and the number of trips that will be generated.

The fee allocation factor for retail development is further adjusted by an intercept factor. This factor is applied to account for the characteristic of retail development to attract existing trips on the circulation system. Data from the ITE Trip Generation Manual indicates that typical retail development can generate approximately 50 percent new trips and intercept approximately 50 percent existing trips.

PROPOSED FEES

Table G shows the proposed fees for the construction of new signals and circulation improvements in the City of Grand Terrace.

Table G					
Signal Improvement Fee Analysis:					
Total Cost of Improvements:		$1,300,000			
New Development Share:		0.15			
Cost Assigned to New Development:		$190,848			
Un-assigned Cost:		$1,109,354			
Fee:		Unit:	Factor:	Fee per Unit:	
	Low Density Residential	D.U.'s	0.000255923	$49	
	Medium Density Residential	D.U.'s	0.00025597	$49	
	Retail	TSF-GLA	0.000702313	$134	
	Industrial\Warehouse	Acre	0.001695214	$323	
	Office Professional	TSF-GFA	0.000373716	$71	
Circulation Improvement Fee Analysis:					
Total Cost of Improvements:		$6,380,025.00			
New Development Share:		0.15			
Cost Assigned to New Development:		$935,634			
Un-assigned Cost:		$5,444,391			
Fee:		Unit:	Factor:	Fee per Unit:	
	Low Density Residential	D.U.'s	0.000255923	$1,393	
	Medium Density Residential	D.U.'s	0.00025597	$1,394	
	Retail	TSF-GLA	0.000702313	$3,824	
	Industrial\Warehouse	Acre	0.001695214	$9,229	
	Office Professional	TSF-GFA	0.000373716	$2,035	

As indicated by the data on Table G, the total cost for new signal construction is estimated at $1.3 million. Fifteen percent of the cost, or $190,646, is proposed to be funded by a circulation improvement fee. This leaves an unassigned cost of $1,109,354. Also Table G shows the total cost to fund construction of the circulation improvements in the City of Grand Terrace is estimated at $6,380,025. The fee program will fund 15 percent of this amount or $935,634. This leaves an unassigned cost for circulation improvements at $5,444,391.

FUNDING UNASSIGNED COST

The total unassigned cost to fund construction of signal and circulation improvements in the City of Grand Terrace is estimated at $6,553,754. There are several funding sources that may be considered to cover these unassigned cost. These include the following:

Measure I - Currently, the City receives approximately $100,000 per year which can be used to fund circulation improvements or roadway maintenance.

Gasoline Tax Revenues - As the result of the passage of SB45, County Regional Transportation Planning Agencies such as SANBAG have broad discretionary authority to fund circulation improvements at the local level. These monies can be used to fund arterial improvements such as needed in the City of Grand Terrace, if approved by SANBAG.

The Congestion Management Air Quality (CMAQ) and Surface Transportation Program (STP) grant programs of the Inter-modal Surface Transportation Efficiency Act (ISTEA) -

These two grant programs from ISTEA can be used to fund local circulation improvements. STP funds can be used to fund a broad range of improvements, including signal and arterial improvements. CMAQ funds can be used only for projects that relieve traffic congestion. Lane additions are specifically excluded as an eligible use for CMAQ funds. However, signal improvements that relieve traffic congestion or reduce vehicle delay are eligible.

ISTEA is currently up for reauthorization by Congress. Gasoline tax funds authorized under SB45, STP and CMAQ funds are all administered by SANBAG which has earmarked these funds for major highway projects throughout the County. Thus, they are currently unavailable as a funding source for local circulation improvements.

AB2766 Funds - Pursuant to AB2766, the City currently receives $2.00 per year for each registered vehicle in its jurisdiction. These vehicle registration subventions can be used for intersection improvements that relieve traffic congestion.

Petroleum Violation Escrow Account -These funds are administered directly by the State Legislature. Annually, grants are made to local government which can be used for circulation improvements.

IMPLEMENTATION ISSUES

If the City of Grand Terrace enacts a circulation improvement fee program it should be aware of the following:

- The fees are based on current cost estimates which are subject to change over time due to factors such as inflation. The fee should be reviewed periodically to verify that they are consistent with the cost. Furthermore, it is legally required to review the fee at least once every five years.

- Revenues generated be the fee program must be kept in an account separate from other City funds.

- Revenues generated by the fee program must be expended within five years of collection. If not, the City must make findings that identify when the funds will be expended. If these findings are not made, the money must be refunded.

- Once sufficient funds have been collected, the City has 180 days to identify the starting date of construction.

- The improvements that the fee will finance must be identified when the fee is imposed.

Transportation Engineering and Planning
Phone: 949 552-4357

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Irvine, CA 92623

CITY OF GRAND TERRACE
CIRCULATION ELEMENT UPDATE STUDY
TECHNICAL MEMORANDUM NUMBER 6
TECHNICAL AMENDMENTS

May 1998

INTRODUCTION

Several streets in the City of Grand Terrace have been completed to a standard that is different from their respective designations in the existing Circulation Element. The City does not intend to reconstruct these roads to meet this standard called for in the Circulation Element. Furthermore, the year 2015 traffic forecast data included in Technical Memorandum No. 2, Base Line Analysis, does not indicate that reconstruction to be circulation element standard is necessary. It is recommended that the streets the reclassified to their current built out standard. These streets are discussed as follows:

OBSERVATION DRIVE

Observation Drive extends from Palm Drive to Van Buren. Currently, it is classified as a local street, however, in the draft Circulation Element Amendment it is proposed to be reclassified as a Collector. This street is built out as Collector with a cross-section pavement width of 44 feet in 66 feet of r. o. w. Observation Drive functions as a Collector to the residential area that is south of Barton Road and Palm Avenue, and east of Mount Vernon Avenue.

DESIGNATED COLLECTORS THAT ARE BUILT AS LOCAL STREETS

There are several streets which are designated as Collectors in the existing Circulation Element, however, these streets are built to less than the cross-section standard for this classification of roadway . The year 2015 forecasts shown in Technical Memorandum No. 2 indicate that the streets can be reclassified as Locals without a negative impact to system Level of Service. The streets which are proposed to be re-classified as Locals in the Circulation Element Amendment are listed below:

Street:	From:	To:
1) Grand Terrace Rd.	Vivienda Av.	East Terminus
2) Brentwood St.	Mount Vernon Av.	Preston St.
3) Preston St.	Brentwood St.	Barton Rd.
4) Honey Hill Dr.	Barton Rd.	Palm Av.
5) Westwood St.	Honey Hill Dr.	East City Limit

Community and Economic Development
Department

NEGATIVE DECLARATION

Pursuant to the California Environmental Quality Act, a Negative Declaration is hereby filed on the below referenced project, on the basis that said project will not have a significant effect on the environment.

DESCRIPTION OF THE PROJECT:

GPU-97-01, and E-98-05, an amendment to the Circulation Element of the Grand Terrace General Plan

APPLICANT: City of Grand Terrace

LOCATION: City Wide

FINDING OF NO SIGNIFICANT EFFECTS:

Based on the attached Initial Study, there is no substantial evidence that the project will have a significant impact on the environment.

P. Materassi

Patrizia Materassi
Community and Economic Development Director
City of Grand Terrace

8-31-98
Date

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City of Grand Terrace

Community and Economic Development Department

Environmental Checklist Form

1.	Project Title:	**City of Grand Terrace General Plan Circulation Element Update**
2.	Lead Agency Name and Address:	City of Grand Terrace Community and Economic Development Department 22795 Barton Road Grand Terrace, CA 92313
3.	Contact Person and Phone Number:	Patrizia Materassi, Community and Economic Development Director: (909) 430-2247
4.	Project Location:	City - Wide, City of Grand Terrace, CA 92313
5.	Project Sponsor's Name	City of Grand Terrace Community and Economic Development Department
6.	General Plan Designation:	N/A
7.	Zoning:	N/A

8. Description of Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

The proposed project is an update to the City of Grand Terrace Circulation Element of the General Plan. The Circulation Element describes the master plan of streets and highways that supports the extent and intensity of development in Grand Terrace, and connects the City with other communities and the region. Through its text and graphics, the Circulation Element describes the nature and extent of the existing circulation network; and identifies trends, issues, and public policies relating to the development of a balanced, multi-modal circulation system.

Major Roads and Highways

The principal highway through Grand Terrace is Interstate 215 (I-215), a six-lane freeway with interchanges at Washington Street (north of the City), Barton Road, and Iowa Avenue (southwest of the City). I-215 is owned and maintained by the State of California, Department of Transportation (Caltrans). The main north-south arterial through the City is Mount Vernon Avenue, which extends from High grove to the south, through Grand Terrace to I-215, and north into Colton. Most of existing Mount Vernon Avenue between Grant Terrace Road and I-215 interchange is within the City of Colton consisting of two lanes built into the side of a hill. The main east-west arterial is Barton Road. It is the most heavily traveled surface street in Grand Terrace.

Generally the City's existing streets and intersections that are maintained by the City of Grand Terrace are operating at traffic level of service (LOS) C or better. LOS C is defined as "stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream".

Issues:

The City Council and the City's General Plan Task Force have identified the following issues that are addressed in the Circulation Element and its master plan of streets and highways:

1. Circulation impacts of development and transportation improvements on Grand Terrace and from adjacent vicinity for a future horizon of twenty years. Specific issues of concern include the impacts of I-215, the prospective widening and upgrading of Pigeon Pass Road, development impacts of the City's Industrial area, and future development in adjacent communities.

2. The need for arterial enhancements connecting to I-215 in response to future prospective capacity deficiencies.

3. Additional arterial capacity to serve the City's industrial area.

4. Multi modal facilities including interconnection with regional transit facilities, such as Metrolink; local shuttles; and bikeways and pedestrian facilities.

5. Shared circulation system improvements with the City of Colton including La Cadena Drive, Main Street, Mount Vernon Avenue, and the intersection of Main Street at Iowa.

6. Consideration of a traffic impact fee to be charged to new development to fund construction of improvements to keep the Master Plan circulation system operating at LOS C, or better.

7. Traffic safety, especially in the vicinity of schools on Dos Rios and Washington.

8. Infiltration in residential neighborhoods of general and truck traffic.

9. Amenities to Barton Road to enhance its attractiveness as the City's primary commercial corridor, and to encourage bicycle and pedestrian modes of travel, and to resolve egress/ingress traffic conflicts.

Statement of Goals

To address the above list of issues, the Circulation Element establishes the following goals:

1. To provide for a transportation system which supports planned land uses and improves the quality of life.

2. To promote the safe and effective movement of all segments of the population and the efficient transport of goods.

3. To make efficient use of existing and future transportation facilities.

4. To promote environment quality and promote the wise and equitable use of economic and natural resources.

9. Surrounding Land Uses and Settings: (Briefly describe the project's surroundings.)

North: N/A.
East: N/A.

South: N/A.
West: N/A.

10. Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement)

San Bernardino County Association of Governments (SANBAG), Cal Trans, Southern California Association of Governments (SCAG), Office of Planning and Research (OPR)

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Land Use and Planning	■ Transportation/Circulation	☐ Public Services
☐ Population and Housing	☐ Biological Resources	☐ Utilities and Services Systems
☐ Geological Problems	☐ Energy and Mineral Resources	☐ Aesthetics
☐ Water	☐ Hazards	☐ Cultural Resources
☐ Air Quality	☐ Noise	☐ Recreation
	☐ Mandatory Findings of Significance	

Determination:

On the basis of this initial evaluation (To be completed by the Lead Agency):

■ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect 1) has been adequately analyzed in an earlier document to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project.

P Materassi — 5-15-98

Signature — Date

Patrizia Materassi — Community and Economic Development Director

Printed Name — Title

Evaluation of Environmental Impacts:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) "Potential Significant Impact" is appropriate if there is substantial evidence that an effect is significant. If there are one or more "Potential Significant Impact" entries when the determination is made, and EIR is required.

4) "Potential Significant Unless Mitigated Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potential Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5) Earlier Analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). Earlier analyses are discussed in Section XVII at the end of the checklist.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). References to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
I. Land Use and Planning. Would the proposal:				
a) Conflict with general plan designation or zoning? (Source: # of General Plan, VI-8 Commercial; Zoning Map, BRSP District)	☐	☐	☐	■
b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project? ( )	☐	☐	☐	■
c) Be incompatible with existing land use in the vicinity? (Zoning District Map, BRSP-VC Zoning Regulations in Zoning Code)	☐	☐	☐	■
d) Affect agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)? ( )	☐	☐	☐	■
e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)? ( )	☐	☐	☐	■

A brief explanation to answer I:

The proposed Circulation Element supports the efficient flow of vehicular traffic to and between land uses in the City and adjacent communities. Policies of the Circulation Element have been prepared consistent with the City General Plan Land Use Element, Zoning Code and San Bernardino County Congestion Management Program (CMP). No potential adverse impacts to land use and planning policies are expected to result from implementation of the project, as this update to the Circulation Element is not growth inducing or restricting. It mostly updates description of "existing conditions" and evaluates "travel demand" up to year 2015. All findings show our current element is adequate with no significant alterations required.

II. Population and Housing. Would the proposal:				
a) Cumulatively exceed official regional or local population projections? ( )	☐	☐	☐	■
b) Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)? ( )	☐	☐	☐	■
c) Displace existing housing, especially affordable housing? ( )	☐	☐	☐	■

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No impact

A brief explanation to answer II:

The proposed project is a circulation element update of the General Plan. All circulation improvements developed in accordance with circulation element policies will be required to comply with adopted City policies. No potential adverse impacts to housing policies are expected to result from implementation of the project, as this update to the Circulation Element is not growth inducing.

III Geologic Problems. Would the proposal result in or expose people to potential impacts involving:

a)	Fault rupture? (General Plan MEA/EIR - ES-4)	☐	☐	☐	■
b)	Seismic ground shaking?(GP MEA/EIR-II-1)	☐	☐	☐	■
c)	Seismic ground failure, including liquefaction? (GP MEA/EIR - II-1)	☐	☐	☐	■
d)	Seiches, tsunami, or volcanic hazard? (GP MEA/EIR II-1)	☐	☐	☐	■
e)	Landslides or mudflows? (GP MEA/EIR II-1)	☐	☐	☐	■
f)	Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill? (GP MEA/EIR II-20)	☐	☐	☐	■
g)	Subsidence of the land? (GP MEA/EIR II-1, Append B)	☐	☐	☐	■
h)	Expansive soil? (GP MEA/EIR II-1, Append B-4)	☐	☐	☐	■
I)	Unique geologic or physical features? (GP MEA/EIR II-1)	☐	☐	☐	■

A brief explanation to answer III:

The proposed project is a circulation element of the General Plan. All circulation improvements developed in accordance with circulation element policies will be required to comply with adopted City grading policies. The project is not expected to result in or expose people to potential geologic problems.

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IV. Water. Would the proposal result in:				
a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff? (GP MEA/EIR II-1 Append B)	☐	☐	☐	■
b) Expose to people or property to water related hazards such as flooding? (GP MEA/EIR II-1)	☐	☐	☐	■
c) Discharge into surface water or other alteration of surface water quality (e.g., temperature, dissolved oxygen or turbidity)? (GP MEA/EIR II-1)	☐	☐	☐	■
d) Changes in the amount of surface water in any water body? (GP MEA/EIR II-1)	☐	☐	☐	■
e) Changes in currents, or the course or direction of water movements? ( )	☐	☐	☐	■
f) Changes in the quality of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations, or through substantial loss of groundwater recharge capability? (GP MEA/EIR II-1)	☐	☐	☐	■
g) Altered direction or rate of flow of groundwater? (GP MEA/EIR II-1)	☐	☐	☐	■
h) Impacts to groundwater quality? (GP MEA/EIR II-1, and 97 Regional WCA Report)	☐	☐	☐	■
I) Substantial reduction in the amount of groundwater otherwise available for public water supplies? (GP MEA/EIR II-1)	☐	☐	☐	■

A brief explanation to answer IV:

All improvements developed pursuant to proposed Circulation Element policies will be required to comply with City drainage and flood control ordinance, policies and standards. No potential adverse impacts to drainage patterns or ground water are expected to result from implementation of the project.

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
V. Air Quality. Would the proposal:				
a) Violate any air quality standard or contribute to an existing or projected air quality violation? (GP MEA/EIR II-14, and AQMP)	☐	☐	☐	■
b) Expose sensitive receptors to pollutants? ( )	☐	☐	☐	■
c) Alter air movement, moisture, or temperature, or cause any change in climate? ( )	☐	☐	☐	■
d) Create objectionable odors? ( )	☐	☐	☐	■

A brief explanation to answer V:

The proposed Circulation Element promotes policies that maintain an LOS "C" on City roads and alternative modes of transportation. An LOS "C" provides for the smooth flow of traffic, which minimizes vehicular air pollutant emissions. In this manner, the proposed project is expected positively impact local and regional air quality.

VI. Transportation/Circulation. Would the proposal result in:				
a) Increase vehicle trips or traffic congestion? (Trans. Engineering and Planning Consultant)	☐	☐	■	☐
b) Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses? ( )	☐	☐	☐	■
c) Inadequate emergency access or access to nearby uses? ( )	☐	☐	☐	■
d) Insufficient parking capacity on-site or off-site?	☐	☐	☐	■
e) Hazards or barriers for pedestrians or bicyclists? (TCM Ordinance 147)	☐	☐	☐	■
f) Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)? (TCM Ordinance 147)	☐	☐	☐	■
g) Rail, waterborne or air traffic impacts? ( )	☐	☐	☐	■

ues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact

Brief explanation to answer VI:

The proposed Circulation Element promulgates implementation measures intended to achieve the following objectives:

1. Plan, provide, and maintain an integrated the vehicular circulation system to accommodate projected local and regional needs.
2. Develop a vehicular circulation system consistent with accepted standards of transportation engineering safety, with sensitivity to adjoining land uses.
3. Establish, develop, and promote systems and amenities for alternative travel modes including bicycles, pedestrians and transit.
4. Take proactive measures to ensure that the City's residential neighborhoods are not adversely affected by excessive traffic and are more liveable and pedestrian friendly.
5. The City will ensure that the master plan of streets and highways circulation system is completed by utilization of a variety of means to fund the construction of these improvements which are described below. In addition, the City will pursue alternative means to fund ongoing maintenance and safety enhancement of the circulation infrastructure.

Through implementation of these objectives, the proposed Circulation Element supports development of a balanced, multi-modal circulation system. In this manner, the proposed project is expected to positively impact local and regional transportation/circulation systems. The project promotes implementation of our transportation control measures ordinance (TCMs) which addresses interrelation of transportation/air quality and land use policies.

The Circulation Element Update provides a new master plan of highways. Upon adoption, the Update will supersede the circulation discussion contained in the City's existing 1988 MEA, and amend that discussion relative to existing and future levels of service and average daily traffic volumes. Generally, the proposed Update will not alter existing MEA discussion relative to principal highway configuration.

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VII. Biological Resources. Would the proposal result in impacts to:				
a) Endangered, threatened, or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)? (GP MEA/EIR II-20, Append C)	☐	☐	☐	■
b) Locally designated species (e.g., heritage trees)? (GP MEA/EIR II-20)	☐	☐	☐	■
c) Locally designated natural communities (e.g., oak forest, coastal habitat, etc.)? (GP MEA/EIR II-20)	☐	☐	☐	■
d) Wetland habitat (e.g., marsh, riparian, and vernal pool)? ( )	☐	☐	☐	■
e) Wildlife dispersal or migration corridors? (GP MEA/EIR II-20)	☐	☐	☐	■

Brief explanation to answer VII:

No endangered or sensitive biological resources have been identified in the City. No potential adverse impacts to biological resources are expected to result from implementation of the project.

Issues (and Support Information Sources):		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VIII. Energy and Mineral Resources. Would the proposal:					
a)	Conflict with adopted energy conservation plans? (GP MEA/EIR II-19, and Append D)	☐	☐	☐	■
b)	Use non-renewable resources in a wasteful and inefficient manner?	☐	☐	☐	■
c)	Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State? (GP MEA/EIR II-19, and Append B)	☐	☐	☐	■

Brief explanation to answer VIII:

No mineral resources have been identified in the City. The proposed Circulation Element is not expected to affect energy conservation plans or non-renewable resources. No potential adverse impacts to energy or mineral resources are expected to result from implementation of the project.

IX. Hazards. Would the proposal involve:					
a)	A risk of accidental explosion or release of hazardous substance (including, but not limited to: oil, pesticides, chemicals, or radiation)? (GP MEA/EIR II-7)	☐	☐	☐	■
b)	Possible interference with emergency response plan or emergency evacuation plan? (GT Emergency Plan, and GP MEA/EIR II-13)	☐	☐	☐	■
c)	The creation of any health hazard or potential health hazard? (GP MEA/EIR II-1)	☐	☐	☐	■
d)	Exposure of people to existing sources of potential health hazards? (GP MEA/EIR II-1)	☐	☐	☐	■
e)	Increase fire hazard in areas with flammable brush, grass, or trees? (GP MEA/EIR II-6)	☐	☐	☐	■

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact

Brief explanation to answer IX:

Implementation of the proposed Circulation Element is not expected to result in adverse impacts relative to hazards. It will actually improve safety for both vehicular and pedestrian traffic via elimination of road obstacles, raised medians, and sidewalks for school children and bicycle commuters.

X. Noise. Would the proposal result in:

a)	Increase in existing noise levels? (GP MEA/EIR II-10)	☐	☐	☐	■
b)	Exposure of people to severe noise levels? (GP MEA/EIR II-10)	☐	☐	☐	■

Brief explanation to answer X.

By providing for the smooth flow of vehicular traffic, and recommended traffic calming alternatives for residential neighborhoods, the proposed Circulation Element is not expected to result in adverse noise impacts.

XI. Public Services. Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:

a)	Fire protection? ( )	☐	☐	☐	■
b)	Police protection? ( )	☐	☐	☐	■
c)	Schools? ( )	☐	☐	☐	■
d)	Maintenance of public facilities, including roads? ( )	☐	☐	☐	■
e)	Other governmental services? ( )	☐	☐	☐	■

es (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact

Brief explanation of answer XI.

By providing for the smooth flow of vehicular traffic, the proposed Circulation Element is expected to assist fire and police protection services. In regard to road maintenance, Objective # 5 of the Circulation Element commits the City to pursuing alternative means to fund ongoing maintenance and safety enhancement of the circulation infrastructure. In this manner, the project is expected to improve road maintenance. No potential adverse impacts to public services are expected to result from project implementation.

XII. Utilities and Services Systems. Would the proposal result in a need for new systems or supplies, or substantial alternations to the following utilities:

a)	Power or natural gas? (GP MEA/EIR II-32, II-33)	☐	☐	☐	■
b)	Communications systems? (GP MEA/EIR II-33)	☐	☐	☐	■
c)	Local or regional water treatment or distribution facilities? (GP MEA/EIR II-30)	☐	☐	☐	■
d)	Sewer or septic tanks? (GP MEA/EIR II-30)	☐	☐	☐	■
e)	Storm water drainage? (GP MEA/EIR II-33)	☐	☐	☐	■
f)	Solid waste disposal? (GP MEA/EIR II-32)	☐	☐	☐	■
g)	Local or regional water supplies? (GP MEA/EIR II-30)	☐	☐	☐	■

Brief explanation of answer XII.

Implementation of the proposed Circulation Element is not expected to result in adverse impacts relative to utilities or services systems.

Issues (and Support Information Sources):		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XIII. Aesthetics. Would the proposal:					
a)	Affect a scenic vista or scenic highway? (GP MEA/EIR II-22)	☐	☐	☐	■
b)	Have a demonstrable negative aesthetic effect? ( )	☐	☐	☐	■
c)	Create light or glare? ( )	☐	☐	☐	■

Brief explanation to answer XIII.

Implementation of the proposed Circulation Element is not expected to result in adverse impacts relative to aesthetics. It will actually result in a positive aesthetic impact due to proposed raised landscape median, pedestrian and biketrails.

XIV. Cultural Resources. Would the proposal:					
a)	Disturb paleontological resources? (GP MEA/EIR II-20)	☐	☐	☐	■
b)	Disturb archaeological resources? (GP MEA/EIR II-20)	☐	☐	☐	■
c)	Affect historical resources? (GP MEA/EIR II-22)	☐	☐	☐	■
d)	Have the potential to cause a physical change which would affect unique ethnic cultural values? (GP MEA/EIR II-22)	☐	☐	☐	■
e)	Restrict existing religious or sacred uses within the potential impact area? ( )	☐	☐	☐	■

Brief explanation to answer XIV.

Implementation of the proposed Circulation Element is not expected to result in adverse impacts relative to cultural resources.

ues (and Support Information Sources):		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XV. Recreation. Would the proposal:					
a)	Increase the demand for neighborhood or regional parks or other recreational facilities? (GP MEA/EIR II-21)	☐	☐	☐	■
b)	Affect existing recreational opportunities? (GP MEA/EIR II-21)	☐	☐	☐	■

Brief explanation to answer XV.

Implementation of the proposed Circulation Element is not expected to result in adverse impacts relative to recreation.

Issues (and Support Information Sources):		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. Mandatory findings of significance.					
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plant or animal, eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	■
b)	Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	☐	☐	■
c)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of other probable future projects.)	☐	☐	■	☐
d)	Does the project have environmental effects which will cause substantial adverse effect on human beings, either directly or indirectly?	☐	☐	☐	■

sues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact

Brief explanation to answers XVI.

Less Than Significant Impact. Implementation of the proposed Circulation Element is expected to improve and/or maintain acceptable levels of vehicular service in the City. This may result in positive impacts to traffic/circulation, air quality, noise and road maintenance. Cumulatively, the Circulation Element's master plan of streets and highways is expected to facilitate travel both within and across Grand Terrace. Local traffic is expected to spill over to neighboring communities and on to regional freeway systems. However, because the Circulation Element has been prepared consistent with San Bernardino County Congestion Management Program (CMP), cumulative adverse impacts are expected to be reduced to levels of insignificance.

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact

XVII. Earlier Analysis.

Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, one or more effects have been adequately analyzed in an earlier EIR, or negative declaration. Section 15063(c)(3)(D). In this case a discussion should identify the following on attached sheets:

a) **Earlier analysis used.** Identify earlier analyses and state where they are available for review.

- Used the Grand Terrace General Plan Master Environmental Assessment and EIR for most of the base impact information. Both documents are available at the Grand Terrace Community and Economic Development Department.

b) **Impacts adequately addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measured based on the earlier analysis.

- The Circulation Element Update provides a updated new master plan of highways, and encourages multi-modal transportation. Upon adoption, the Update will supersede the circulation discussion contained in the City's existing 1988 MEA, and amend that discussion relative to existing and future levels of service and average daily traffic volumes. Generally, the proposed Update will not alter existing MEA discussion relative to principal highway configuration, or build out requirements. Update Circulation Elements is not growth inducing or reducing. Findings show that current circulation plan with proposed insignificant updates is adequate to maintain LOS at satisfactory levels.

c) **Mitigation measures.** For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measured which were incorporated or refined from the earlier document and the extent they address site specific conditions for the project.

- Not Applicable

Issues (and Support Information Sources):	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact

JL:LM:lm

Grand Terrace Community and Economic Development Dept

Authority: Public Resources Code Sections 21083 and 21087.

References: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151; Sunstrom v. County of Mendocino, 202 Cal.App.3d 296 (1988); Leonoff v. Monterey Board of Supervisors, 22 Cal.App.3d 1337 (1990)

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